

CONTRACT DOCUMENTS AND SPECIFICATIONS

FOR

**SC HIGHWAY 403
WATER TREATMENT PLANT
IMPROVEMENTS**

FOR

FLORENCE COUNTY, SC

June 2014

URS CORPORATION PROJECT NO. 46423177

CDBG PROJECT NO. 4-CI-11-030

60% SPECIFICATIONS

CONTRACTOR: _____

ADDRESS: _____

CONTRACTOR'S LICENSE NUMBER: _____

URS

URS Corporation
425 S. Cashua Drive, Suite A
Florence, South Carolina 29501-3334
PH: (843) 665-9166 FAX: (843) 665-9167

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WATER TREATMENT PLANT
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ADVERTISEMENT FOR BIDS

Owner: Florence County

CDBG Project No.: 4-CI-13-030

URS Corporation Project No.: 46423177

Separate sealed bids for SC Highway 403 Water Treatment Plant Improvements for Florence County will be received at the Florence County Complex, 180 N. Irby Street, County Council Chambers, Room 803, Florence, SC 29501 until XX on XX and then at said place be publicly opened and read aloud.

The work to be done consists of furnishing all materials, equipment and labor necessary to construct US Highway 403 Water Treatment Plant Improvements, consisting of the following:

The work to be done consists of furnishing all materials, equipment and labor necessary to construct the Water Treatment Plant Improvements for Florence County, consisting of: the removal and replacement of filter media, the removal and replacement of filter valves and pressure gauges, sand blasting and painting of the filter vessels and filter piping, removal and replacement of the lime feed system, removal and replacement of chlorine booster pumps, removal and replacement of air compressor and aerator, the removal and replacement of exhaust fans, louvers and heaters, the installation of a new sodium fluorosilicate feed system, and other miscellaneous improvements.

This project is being funded in whole or in part by the Community Development Block Grant (CDBG) Program. All federal CDBG requirements will apply to the contract. Bidders on this work will be required to comply with the President's Executive Order No. 11246 and Order No. 11375 which prohibit discrimination in employment regarding race, creed, color, sex or national origin. Bidders must comply with Title VI of the Civil Rights Act of 1964, the Davis-Bacon Act, the Anti-Kickback Act, the Contract Work Hours and Safety Standards Act, and 40 CFR 33.240.

Bidder must make positive efforts to use small and minority owned business and to offer employment, training and contracting opportunities in accordance with Section 3 of the Housing and Urban Development Act of 1968. Attention of bidders is particularly called to the requirements as to conditions of employment to be observed and minimum wage rates to be paid under the contract.

The Information for Bidders, Bid Form, Contract, Plans, Specifications, Bid Bond, Performance Bond and Payment Bond, and other contract documents may be examined at the following locations:

Owner: Florence County.

Engineers: URS Corporation, Florence, SC.

Office of SC Minority Business Development: 1515 Richland Street, Columbia, SC.

Drawings, specifications and contract documents may be obtained from the office of URS Corporation, PO Box 6406, Florence, SC 29502-6406 upon a non-refundable payment of \$250.00. When requesting drawings, specifications or contract documents, provide the following information about your company: Mailing address; street (UPS) address; telephone number; and FAX number (if applicable) and e-mail address.

Bidders must deposit security with all bids. Security shall be in the form of a certified check or bid bond made payable to the Owner, and shall be for an amount equal to not less than five

percent (5%) of the amount of the bid. Provisions of the security shall be as described in the Information for Bidders.

No bid will be considered unless the bidder is legally qualified under the provisions of the South Carolina Contractor's Licensing Law (South Carolina Code of Laws as amended on April 1, 1999, Chapter 11, Sections 40-11-10 through 40-11-428). Contractors shall have a classification of WL.

No bidder may withdraw the bid within 90 days after the actual date of the opening and thereof.

The Owner reserves the right to waive any informalities or to reject any or all bids.

The Owner requests that all bidders respond with an actual bid or with a sealed "No Bid." This provision guards against receiving an insufficient response to the Advertisement for Bids.

ENGINEERS

URS Corporation
PO Box 6406
Florence, SC 29502-6406

OWNER

Florence County
180 N. Irby Street
Florence, SC 29501

INFORMATION FOR BIDDERS

1. RECEIPT AND OPENING OF BIDS

Florence County (hereinafter called the "Owner"), invites bids on the bid form attached hereto, all blanks of which must be appropriately filled in. Bids will be received by the Owner at the Florence County Complex, County Council Chambers, Room 803, 180 N. Irby Street, Florence, SC 29501 until XX on XX at which time said bids will be publicly opened and read aloud. The envelopes containing your bid and Bid Bond only must be sealed, addressed to the Florence County and designated as Bid for US Highway 403 Water Treatment Plant Improvements.

The Owner may consider informal any bid not prepared and submitted in accordance with the provisions hereof and may waive any informalities or reject any and all bids. Any bid may be withdrawn prior to the above scheduled time for the opening of bids or authorized postponement thereof. Any bid received after the time and date specified shall not be considered. No bidder may withdraw a bid within 90 days after the actual date of the opening thereof.

2. PREPARATION OF BID

Each bid must be submitted on the bid form. All blank spaces for bid prices must be filled in, in ink or typewritten and a Bid Bond must be submitted with the bid.

Bids which are incomplete, unbalanced, conditional or obscure, or which contain additions not called for, erasures, alterations, or irregularities of any kind, or which do not comply with the Information for Bidders, may be rejected at the option of the Owner.

The correct total amount bid for the completed work is defined as the correct sum total of the amounts bid for the individual items in the Proposal. The correct amount bid for each unit price item is defined as the correct product of the quantity listed for the item by the unit price bid.

Each bid must be submitted in a sealed envelope bearing on the outside the name of the bidder, bidder's address, Contractor's License Number, and the name of the project for which the bid is submitted. If forwarded by mail, the sealed envelope containing the bid must be enclosed in another envelope addressed as specified above.

If a "No Bid" is submitted, it must be in a sealed envelope, bearing on the outside the name of the bidder, bidder's address, Contractor's License Number, and the name of the project for which the "No Bid" was submitted. If forwarded by mail, the sealed envelope containing the "No Bid" must be enclosed in another envelope addressed as specified above.

Only contractors who have purchased a complete set of Drawings, specifications and contract documents will be allowed to bid.

3. SUBCONTRACTS

The bidder is specifically advised that any person, firm or other party to whom it is proposed to award a subcontract under this contract must be acceptable to the Owner and the Department of Housing and Urban Development, whose determination of acceptability will be based on Item 16(a) and (c) of this Section.

- (a) Must submit Form HUD-4238-CD-3, Certification by Proposed Subcontractor Regarding Equal Employment Opportunity. Approval of the proposed subcontract award cannot be given by the Owner unless and until the proposed subcontractor has submitted the Certification and/or other evidence showing that it has fully complied with any reporting requirements to which it is or was subject.

Although the bidder is not required to attach such certifications by proposed subcontractors to his bid, the bidder is here advised of this requirement so that appropriate action can be taken to prevent subsequent delay in contract awards.

4. TELEGRAPHIC MODIFICATION

Any bidder may modify his bid by telegraphic communication at any time prior to the scheduled time for receipt of bids, provided such telegraphic communication is received by the Owner prior to closing time, and provided further the Owner is satisfied that a written confirmation of the telegraphic modification over the signature of the bidder was mailed prior to the closing time. The telegraphic communication should not reveal the bid price, but should provide the addition or subtraction or other modification so that the final prices or terms will not be known by the Owner until the sealed bid is opened. If written confirmation is not received within two days from the closing time, no consideration will be given to the telegraphic modification.

5. METHOD OF BIDDING

The Owner invites the following bid(s):

- a. Lump Sum.

6. QUALIFICATION OF BIDDER

The Owner may make such investigations as is deemed necessary to determine the ability of the bidder to perform the work, and the bidder shall furnish to the Owner all such information and data for this purpose as the Owner may request. The Owner reserves the right to reject any bid if the evidence submitted by, or investigation of, such bidder fails to satisfy the Owner that such bidder is properly qualified to carry out the obligations of the contract and to complete the work contemplated therein. Conditional bids will not be acceptable.

7. BID SECURITY

Each bid must be accompanied by cash, certified check of the bidder, or a Bid Bond prepared on the form of bid bond attached hereto, duly executed by the bidder as principal and having as surety thereon a surety company approved by the Owner, in the amount of five percent (5%) of the bid. Cash or checks will be returned to all except the three lowest bidders within three days after the opening of bids, and the remaining cash or checks will be returned promptly after the Owner and the accepted bidder have executed the contract, or, if no award has been made within 19 days after the date of the opening of the bids, upon demand of the bidder at any time thereafter so long as bidder has not been notified of the acceptance of its bid.

8. LIQUIDATED DAMAGES FOR FAILURE TO ENTER INTO CONTRACT

The successful bidder, upon failure or refusal to execute and deliver the contract and bonds required within ten (10) days after they have received notice of the acceptance of their bid, shall forfeit to the Owner, as liquidated damages for such failure or refusal, the security deposited with the bid.

9. TIME OF COMPLETION AND LIQUIDATED DAMAGES

Bidder must agree to commence work on or before a date to be specified in a written "Notice to Proceed" of the Owner and to fully complete the project within the number of consecutive calendar days thereafter as indicated on the Bid Form. Bidder must agree also to pay as liquidated damages the sum indicated on the Bid Form for each consecutive calendar day thereafter as hereinafter provided in General Conditions.

10. CONDITIONS OF WORK

Each bidder must inform himself fully of the conditions relating to the construction of the project and the employment of labor thereon. Failure to do so will not relieve a successful bidder of the obligation to furnish all material and labor necessary to carry out the provisions of the contract. Insofar as possible, the Contractor in carrying out the work must employ such methods or means as will not cause any interruption of or interference with the work of any other contractor.

11. ADDENDA AND INTERPRETATIONS

No interpretation of the meaning of the plans, specifications or other pre-bid documents will be made to any bidder orally. Each request for such interpretation should be in writing, addressed to URS Corporation, PO Box 6406, Florence, South Carolina 29502-6406. To be given consideration, the request must be received at least five days prior to the date fixed for the opening of bids. Any and all such interpretations and any supplemental instructions will be in the form of written addenda to the specifications which, if issued, will be mailed to all prospective bidders (at the respective addresses furnished for such purposes), no later than three days prior to the date fixed for the opening of bids. Failure of any bidder to receive any such addendum or interpretation shall not relieve such bidder from any obligation under its bid as submitted. All addenda so issued shall become part of the contract documents.

12. SECURITY FOR FAITHFUL PERFORMANCE

Simultaneously with bidders delivery of the executed contract, the Contractor shall furnish a surety bond or bonds as security for faithful performance of this contract and for the payment of all persons performing labor on the project under this contract, as specified in General Conditions included herein. The surety on such bond or bonds shall be a duly authorized surety company, bond shall be countersigned by an agent residing in South Carolina, and the said surety shall be satisfactory to the Owner.

13. POWER OF ATTORNEY

Attorneys-in-fact who sign bonds or contract bonds must file with each bond a certified and effectively dated copy of their power of attorney.

14. NOTICE OF SPECIAL CONDITIONS

Attention is particularly called to those parts of the contract documents and specifications that deal with the following:

- (a) Inspection and testing of materials
- (b) Insurance requirements
- (c) Stated allowances
- (d) Nondiscrimination in employment
- (e) Wage rates

15. LAWS AND REGULATIONS

The Bidder's attention is directed to the fact that all applicable State laws, municipal ordinances, and the rules and regulations of all authorities having jurisdiction over construction of the project shall apply to the contract throughout, and they will be deemed to be included in the contract the same as though herein written out in full.

16. METHOD OF AWARD - LOWEST QUALIFIED BIDDER WITH LOCAL AND MINORITY BUSINESS PREFERENCE

A. If at the time this contract is to be awarded, the lowest base bid submitted by a responsible bidder does not exceed the amount of funds then estimated by the Owner as available to finance the contract, the contract will be awarded on the base bid only. If such bid exceeds such amount, the Owner may reject all bids or may award the contract on the base bid combined with such deductible alternates applied in numerical order in which they are listed in the Form of Bid, as produces a net amount which is within the available funds. The Owner will decide which is the lowest qualified bidder, and in determining such bidder, the following elements will be considered for each bidder:

1. Maintains a permanent place of business.
2. Has adequate plant equipment and personnel to perform the work properly and expeditiously.
3. Has suitable financial status to meet obligations incident to the work.
4. Has appropriate technical experience.

B. LOCAL AND MINORITY BUSINESS ENTERPRISE PURCHASING PROGRAM:

When lowest bid is the principal determining factor in a bid selection process it is the intent of the City of Florence to provide preference first to local businesses within the City or County of Florence; however, if no local business is eligible or able to participate, preference shall then be provided by the City to minority business enterprises based on the following guidelines:

1. For purposes of this policy, a "local business" is defined as a person, firm, contractor, corporation, or other business entity offering the services and/or products being bid by the City that maintain a place of business and have a physical business address located and operating within the City or County of Florence. The business must have been established for not less than one year within the City or County of Florence and have a valid City of Florence Business License for a minimum of 12 months prior to the bid date.
2. For purposes of this policy, a minority business" declines or is unable to match the lowest bid, then the option to do so moves to the next qualified "local business", if such business' bid is within the percentage guideline of the lowest bid, and is similarly business enterprise (MBE) is defined as an MBE that is certified in accordance with South Carolina Regulations § 19-445.2160, as authorized by §11-35-5270 the South Carolina Code of Laws, as amended.
3. When lowest bid is the principal determining factor in the selection process any "local business" as defined in Subsection A above that submits a responsible and responsive bid within 5% (if the business is located within the City of Florence) or 3% (if the business is located within Florence County) of the non-local bidder who submitted the lowest bid may match the bid submitted by the non-local bidder. A "local business" that is within the percentage guidelines of the lowest bid received shall then be eligible for award of the contract.
4. If the lowest bid is not a "local business" and a "local business" is within the percentage guidelines of the lowest bid received, the "local business",

subject to the provision of Subsection H below, shall be awarded the contract if it is willing to provide goods or services at the same price of the lowest bid received.

6. If conditions of Subsections C above are met and the qualified "local responsible and responsive.
7. In the event there is no "local business" eligible or willing to match the lowest bid, the lowest responsible and responsive bid submitted by an MBE, if any, would be allowed the opportunity to match the bid submitted by the non-local bidder and thereby be awarded the contract when lowest bid is the primary determining factor in the bid selection process.
8. If a procurement is to be made pursuant to state funding requirements, federal funding requirements, bond covenants, or other outside funding source requirements which prohibit or restrict local or MBE preference, then no local or MBE preference consideration will be given.
9. The provisions for a local or MBE preference does not prohibit the right of the City to compare quality of materials proposed for purchase and compare qualifications, character, responsibility and fitness of all persons, firms, contractors, corporations, or other business entities submitting bids. Accordingly, the local or MBE preference for a particular procurement may be waived by the City Manager upon written recommendation and justification by the Department Director.

17. OBLIGATION OF BIDDER

At the time of the opening of bids, each bidder will be presumed to have inspected the site and to have read and be thoroughly familiar with the plans and contract documents, including all addenda. The failure or omission of any bidder to examine any form, instrument or document shall in no way relieve any bidder from any obligation in respect to its bid.

18. ORDER OF WORK

The bidder's attention is directed to Section 00800, Supplemental General Conditions, on special provisions associated with the order of completion of work.

19. COORDINATION OF OTHER DIVISIONS

The bidder's attention is directed to Part I of Section 00800, Supplemental General Conditions, on special provisions associated with the coordination of other divisions.

END OF SECTION

SECTION 00310

BID FORM

SC HIGHWAY 403
WATER TREATMENT PLANT IMPROVEMENTS
FOR
FLORENCE COUNTY

Date: _____
Project No. 46423177
CDBG No. 4-CI-11-030

PROPOSAL OF _____, doing business as a
corporation / a partnership / an individual (Strike out inapplicable terms), with its principal office in
the City of _____, County of _____, State of _____
_____, (hereinafter called "Bidder").

TO: Florence County
(hereinafter called "Owner"),

Gentlemen:

The Bidder, in compliance with your invitation for bids for the construction of SC Highway 403 Water Treatment Plant Improvements having examined the plans and specifications with related documents and the site of the proposed work, and being familiar with all of the conditions surrounding the construction of the proposed project, including the availability of materials and labor, hereby proposes to furnish all labor, materials and supplies, and to construct the project in accordance with the Contract Documents, within the time set forth therein, and at the prices stated below. These prices are to cover all expenses incurred in performing the work required under the Contract Documents, of which this proposal is a part.

Bidder hereby agrees to commence work under this contract on or before a date to be specified in written "Notice to Proceed" of the Owner and to fully complete the project within 270 consecutive calendar days thereafter as stipulated in the specifications. Bidder further agrees to pay as liquidated damages the sum of \$500 for each consecutive calendar day thereafter as hereinafter provided in Paragraph 19 of the General Conditions.

The drawings, specifications and addenda are complementary of each other. What is called for by one shall be as binding as if called for by all. If a conflict between any of the above is discovered by the Contractor, the problem shall be referred to the Engineer as soon as possible for resolution by the Engineer. Should a conflict occur which is not resolved before bid time and/or is necessary to comply with mandatory requirements (i.e., codes, ordinances, etc.), it shall be the Contractor's responsibility to price and bid the more expensive method.

Bidder acknowledges receipt of the following addendum:

No. _____	Dated _____	No. _____	Dated _____
No. _____	Dated _____	No. _____	Dated _____

BASE PROPOSAL: Bidder agrees to perform all of the _____, etc. all as work including, but not limited to, _____, etc. all as described in the specifications and on the plans for the sum of _____ Dollars _____ Cents. (\$ _____)

(Amount shall be shown in both words and figures. In case of discrepancy, the amount shown in words will govern.)

The project will be awarded based on the base bid equipment listed below. The bidder must base his lump sum base bid on the listed (A) equipment/suppliers. Deductions for Owner selected equipment/supplier substitutions will not be considered in determining the basis of award. The bidder may indicate substitute equipment/supplier items by writing in the substitute equipment/supplier item and the amount of deduction for that substitute name write-in.

Substitute equipment/supplier will be deemed as equal if the substitute is the same or better than the product named and described in the specifications in function, performance, reliability, quality and general configuration. Determination of the equality of a substitute shall be determined by the Engineer after the bid, based on submittal data received with the Contractor's bid documents. Should the write-in substitute be determined "not equal", then the bidder shall supply the equipment listed as Item (A) on the bid form. The Owner may determine any substitute "not equal" as the Owner determines to suit his sole best interests at any time.

Evaluation data to determine if a substitute equipment manufacturer/ supplier is an acceptable substitute must be submitted by the bidder with the bid. Information submitted after the bid will not be considered. Information submitted directly by equipment manufacturers/suppliers will not be evaluated. Minimum evaluation data shall include submittal information in conformance with Sections 01340 and 01650 of the contract documents. Data and drawing submittal shall be prepared specifically for this project. Incomplete submittals that do not conform with Sections 01340 and 01650 will not be considered. Sales catalog cuts or marked up drawings from previous projects will not be reviewed. The Owner shall be reimbursed for any engineering costs associated with the review of any substitutes in accordance with the terms of the Engineer's Agreement with the Owner. The Owner is no way obligated to review substitute equipment submittals.

No substitute equipment/supplier will be considered unless, in the opinion of the Owner or Engineer, it conforms to the contract drawings and specifications in all respects, except for the make and manufacture and minor details. Design and preparation of these plans and specifications are based on the equipment/supplier noted in Item (A). The bidder shall be responsible for any and all changes necessary to accommodate the substitute equipment/supplier items. The Owner shall be reimbursed for any and all associated redesign and/or construction drawings in accordance with the terms of the Engineer's Agreement with the Owner. The bidder shall also include any and all costs associated with additional construction costs (mechanical, structural, electrical, architectural, engineering, construction observation, etc.) as the result of a substitute item. The bid shall also include any paid up licenses necessary for the use of the equipment as required.

EQUIPMENT/SUPPLIER SCHEDULE (OWNER SELECTED)				
SPEC SECTION	DESCRIPTION	EQUIPMENT MANUFACTURERS/ SUPPLIERS		AMOUNT OF DEDUCTION FOR SUBSTITUTION
		Base Bid	Substitute	
02751	Gate Valve	Mueller		\$
02751	Air Compressor	Powerex		\$
09870	Repaint Existing Pressure Vessel	TNEMEC Company		\$

09900	Painting	TNEMEC Company		\$
11240	Lime Motor and Mixer	Leeson		\$
11240	Lime Metering Pump	Wallace & Tiernan		\$
11240	Fluoride Volumetric Feeder	Wallace & Tiernan		\$
11240	Fluoride Metering Pump	Wallace & Tiernan		\$
11240	Fluoride scale	Eagle Microsystems		\$
11265	Chlorine Booster Pump	Dayton		\$
11265	Chlorine Gas Detection System	Siemens		\$

UNIT PRICES

For changing quantities of work items from those indicated by the contract drawings, upon written instructions from the Engineer, the following unit prices shall prevail:

1. Ductile Iron Pipe (above grade) \$_____ per lb.
2. Ductile Iron Pipe (below grade) \$_____ per lb.
3. Ductile Iron Fittings (above grade) \$_____ per lb.
4. Ductile Iron Fittings (below grade) \$_____ per lb.
5. D.I. Specials, Dressers, Adapters, etc. \$_____ per lb.

The above unit prices shall include all labor, materials, bailing, shoring, removal, overhead, profit, insurance, etc. to cover the finished work of the several kinds called for. Changes shall be processed in accordance with Paragraph 17 of the General Conditions.

Bidder understands that the Owner reserves the right to reject any or all bids and to waive any informalities in the bidding.

The Bidder agrees that this bid shall be good and may not be withdrawn for a period of 19 calendar days after the scheduled closing time for receiving bids.

Upon receipt of written notice of the acceptance of this bid, Bidder will execute the formal contract attached within 10 days and deliver a Surety Bond or Bonds as required by Paragraph 30 of the General Conditions. The bid security attached in the sum of _____ Dollars

Cents (\$_____) is to become the property of the Owner in the event the contract and bond are not executed within the time above set forth, as liquidated damages for the delay and additional expense to the Owner caused thereby.

By submission of this bid, each bidder certifies, and in the case of a joint bid, each party thereto certifies as to its own organization, that this bid has been arrived at independently, without consultation, communication, or agreement as to any matter relating to this bid, with any other bidder or with any competitor.

[SEAL – (If bid is by a corporation)]

Respectfully submitted:

BY: _____

(Print Name)

(Title)

(Business Address)

HUD/CDBG

SECTION 00312.1

CERTIFICATION REGARDING DEBARMENT, SUSPENSION,
INELIGIBILITY AND VOLUNTARY EXCLUSION

THIS FORM IS TO BE INCLUDED IN ALL HUD/CDBG SUBSIDIZED
PROJECTS. CONTACT PERSON WITH HUD/CDBG FOR LATEST
EXCLUSION FORM BEFORE ADVERTISING PROJECT FOR BIDS.

CERTIFICATION REGARDING DEBARMENT, SUSPENSION INELIGIBILITY AND VOLUNTARY EXCLUSION LOWER TIER COVERED TRANSACTIONS

This certification is required by the regulations implementing Executive Order 12549, Debarment and Suspension, 24 CFR Part 85, Section 85.510, Participants' responsibilities. The regulations were published as Part VII of the May 26, 1988 Federal Register (pages 19160-19211).

(BEFORE COMPLETING CERTIFICATION, READ INSTRUCTIONS BELOW)

- (1) The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principles are presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.
- (2) Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant in this transaction shall attach an explanation to this proposal.

Grant Number: CDBG Project No. 4-CI-11-030 **Name of Participant:** _____

Address of Participant: _____

- | Name and Title of Authorized Representative | Signature | Date |
|---|-----------|------|
| <ol style="list-style-type: none"> 1. By signing and submitting this proposal, the prospective lower tier participant is providing the certification set out below. 2. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment. 3. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances. 4. The terms "covered transaction", "debarred", "suspended", "ineligible", "lower tier covered transaction", "participant", "person", "primary covered transaction", "principle", "proposal", and "voluntarily excluded", as used in this clause, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Order 12549. 5. The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated. 6. The prospective lower tier participant further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion - Lower Tier Covered Transactions", without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions. 7. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may check the Nonprocurement List. 8. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of a participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings. 9. Except for transactions authorized under paragraph 5 of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment. | | |

Form AD-1048

**CERTIFICATION REGARDING DEBARMENT, SUSPENSION,
INELIGIBILITY AND VOLUNTARY EXCLUSION
00312-2**

46423177

SECTION 00350

BID BOND

KNOW ALL MEN BY THESE PRESENTS: That we, the undersigned _____ as Principal, and _____ as Surety, are hereby held and firmly bound unto Florence County as Owner, in the penal sum of _____ Dollars _____ Cents (\$ _____), for the payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, successors and assigns.

Signed this _____ day of _____, 20____.

The condition of the above obligation is such that: Whereas, the Principal has submitted to 1 a certain Bid, attached hereto and by reference made a part hereof, to enter into a contract in writing for the SC Highway 403 Water Treatment Plant Improvements.

NOW, THEREFORE,

- (a) If said BID shall be rejected, or
- (b) If said BID shall be accepted and the Principal shall execute and deliver a contract in the Form of Contract attachment hereto (properly completed in accordance with said BID) and shall furnish a BOND for faithful performance of said contract, and for the payment of all persons performing labor furnishing materials in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said BID, then this obligation shall be void; otherwise the same shall remain in force and effect - it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.

The Surety, for value received, hereby stipulates and agrees that the obligations of said Surety and its BOND shall be in no way impaired or affected by any extension of the time within which the OWNER may accept such BID, and said Surety does hereby waive notice of any such extension.

IN WITNESS WHEREOF, the Principal and Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set forth above.

Principal

(Corporate Seal)

BY: _____ (L.S.)

Surety

(Corporate Seal)

BY: _____ (L.S.)

COUNTERSIGNED (SC RESIDENT AGENT)

BY: _____

IMPORTANT: Surety companies executing BONDS must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the state where the project is located.

NOTE: Bond must be countersigned by a South Carolina resident agent.

END OF SECTION

SECTION 00400.1
NOTICE OF INTENT TO AWARD

OWNER: Florence County

CDBG PROJECT NO. 4-CI-11-030

PROJECT DESCRIPTION: SC Highway 403 Water Treatment Plant Improvements

URS CORPORATION PROJECT NO. 46423177

TO ALL BIDDERS:

This is to notify all bidders that it is the intent of the Owner to award a contract as follows:

NAME OF BIDDER: _____

DATE BIDS WERE RECEIVED: _____

AMOUNT OF BASE BID: \$ _____

ALTERNATE(S) ACCEPTED: # \$ _____

TOTAL AMOUNT OF BASE BID WITH ALTERNATE(S): \$ _____

The Owner has determined that the above named Bidder is responsible and has submitted the lowest responsive bid. The Owner may enter into a contract with this Bidder subject to the contract review by the Department of Commerce, Division of Community Grant Programs.

(Print or Type Name)

(Award Authority Title)

(Signature)

(Date Posted)

POST A COPY OF THIS FORM AT THE LOCATION ANNOUNCED AT THE BID OPENING

SECTION 00500

CONTRACT

THIS AGREEMENT made this _____ day of _____, 20____, by and between Florence County, hereinafter called "Owner", and _____, doing business as a partnership / a corporation /an individual (Strike out inapplicable terms), with its principal office in the City of _____, County of _____, State of _____, hereinafter called "Contractor".

WITNESSETH: That for and in consideration of the payments and agreements hereinafter mentioned, to be made and performed by the Owner, the Contractor hereby agrees with the Owner to commence and complete the construction described as follows: US Highway 76 Water Line Florence to Timmons ville Connection Phase II, hereinafter called the "Project", for the sum of _____ Dollars _____ Cents(\$ _____).

Contractor further agrees to commence and complete any and all extra work in connection therewith, under the terms as stated in the General Conditions and Supplemental General Conditions of the Contract, and the Contract Special Provisions, and Wage Rate Determination; and at his (its or their) own proper cost and expense to furnish all the materials, supplies, machinery, equipment, tools, superintendents, labor, insurance and other accessories and services necessary to complete the said project in accordance with the conditions and prices stated in the Proposal, General Conditions and Supplemental General Conditions of the Contract, CDBG Contract Special Provisions - CSP-1 through CSP-15, the plans, including all maps, plats, blueprints, and other drawings and printed or written explanatory matters thereof, the specifications and contract documents therefore as prepared by URS Corporation, herein entitled the "Engineer," and as enumerated in Paragraph 1 of the Supplemental General Conditions, all of which are made a part hereof and collectively evidence and constitute the Contract.

The Contractor hereby agrees to commence work under the Contract on or before a date to be specified in written Notice to Proceed from the Owner and to fully complete the project within 270 days consecutive calendar days thereafter. The Contractor further agrees to pay as liquidated damages the amount of \$500 for each consecutive calendar day thereafter that the Contractor fails to complete the project, as hereinafter provided in Paragraph 19 of the General Conditions.

The Owner agrees to pay the Contractor in current funds for the performance of the Contract, subject to additions and deductions, as provided in the General Conditions of the Contract, and to make payments on account thereof as provided in Paragraph 25, "Payments to Contractor", of the General Conditions.

IN WITNESS WHEREOF, the parties hereto have executed this contract in six counterparts, each copy of which shall be deemed an original, in the year and day first above mentioned.

Florence County

OWNER

(Seal)

By: _____

Title: _____

ATTEST:

Witness

Witness

(Corporate Seal)

CONTRACTOR

By: _____

Title: _____

ATTEST:

Its Secretary

Witness

CONTRACTOR'S ADDRESS:

SECTION 00600
PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS THAT

(Name of Contractor)

(Address of Contractor)

a (Corporation, Partnership or Individual), hereinafter called Principal, and

(Name of Surety)

(Address of Surety)

hereinafter called Surety, are held and firmly bound unto

Florence County
180 N. Irby Street
Florence, SC 29501

hereinafter called Owner, in the penal sum of _____

_____ Dollars _____ Cents
(\$ _____) in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that whereas the Principal entered into a certain Contract with the Owner dated the _____ day of _____, 20____, a copy of which is hereto attached and made a part hereof for the construction of:

SC Highway 403 Water Treatment Plant Improvements

NOW, THEREFORE, if the Principal shall well, truly and faithfully perform its duties, all the undertakings, covenants, terms, conditions and agreements of said Contract during the original term thereof, and any extensions thereof which may be granted by the Owner, with or without notice to the Surety, and if he shall satisfy all claims and demands incurred under such contract and fully indemnify and save harmless the Owner from all costs and damages which it may suffer by reason failure to do so, and shall reimburse and repay the Owner all outlay and expense which the Owner may incur in making good any default, then this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED FURTHER, that the said Surety, for value received hereby stipulates and agrees that no change, extensions of time, alteration or addition to the terms of the Contract or to the work to be performed thereunder or the specifications accompanying the same shall in any way affect its obligation on this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the Contract or to the work or to the specifications.

PERFORMANCE BOND
00600-1

SECTION 00601
PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS THAT

(Name of Contractor)

(Address of Contractor)

a (Corporation, Partnership or Individual) , hereinafter called Principal, and

(Name of Surety)

(Address of Surety)

hereinafter called Surety, are held and firmly bound unto

Florence County
180 N. Irby Street
Florence, SC 29501

hereinafter called Owner, in the penal sum of _____
_____ Dollars _____ Cents

(\$ _____) in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that whereas the Principal entered into a certain Contract with the Owner dated the _____ day of _____, 20____, a copy of which is hereto attached and made a part hereof for the construction of:

SC Highway 403 Water Treatment Plant Improvements

NOW, THEREFORE, if the Principal shall promptly make payment to all persons, firms, subcontractors and corporations furnishing materials for or performing labor in the prosecution of the work provided for in such contract, and any authorized extension or modification thereof, including all amounts due for materials, lubricants, oil, gasoline, coal and coke, repairs on machinery, equipment and tools, consumed or used in connection with the construction of such work, and all insurance premiums on said work, and for all labor, performed in such work whether by subcontractor or otherwise, then this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED FURTHER, that the said Surety, for value received hereby stipulates and agrees that no change, extensions of time, alteration or addition to the terms of the Contract or to the work to be performed thereunder or the specifications accompanying the same shall in any way affect its obligation on this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the Contract or to the work or to the specifications.

PAYMENT BOND
00601-1

PROVIDED FURTHER, that no final settlement between the Owner and the Contractor shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, this instrument is executed in six (6) counterparts, each one of which shall be deemed an original, this the _____ day of _____, 20__.

Signed, sealed and delivered in
the presence of:

_____	By: _____	Principal - Contractor
_____		_____
As to Principal		Title
_____		_____
	By: _____	Surety
_____		_____
		Attorney-In-Fact
		(Power of Attorney to be Attached)
_____	By: _____	_____
As to Surety		Resident Agent

		Resident Agent Company Name

		Resident Agent Company Address

		Resident Agent Address

NOTES:

1. Date of Bond must not be prior to date of Contract.
2. If Contractor is a Partnership, all partners should execute bond.
3. Surety companies executing bonds must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the state where the project is located.

SECTION 00602.4
NOTICE OF AWARD

TO:

PROJECT DESCRIPTION: SC Highway 403 Water Treatment Plant Improvements

The Owner has considered the bid dated _____ submitted by you for the above described work in response to its Advertisement for Bids and its Information for Bidders.

You are hereby notified that your bid has been accepted for items in the amount of \$_____.

You are required by the Information for Bidders to execute the Agreement and furnish the required Contractor's performance bond, payment bond and certificates of insurance within ten (10) calendar days from the date of this notice to you. If you fail to execute said agreement and to furnish said bonds within ten (10) days from the date of this notice, said Owner will be entitled to consider all your rights arising out of the Owner's acceptance of your bid as abandoned and as a forfeiture of your bid bond. The Owner will be entitled to such other rights as may be granted by law.

You are required to return an acknowledged copy of this Notice of Award to the Owner.

Dated this _____ day of _____, 20__.

Florence County
Owner

(Signature)

By: _____

(Print Name)

Title: _____

Acceptance of Notice

Receipt of the above Notice of Award is hereby acknowledged by _____,

this the _____ day of _____, 20__.

By: _____

Title: _____

00603

CONTRACT CHANGE ORDER

URS

URS Corporation
Telephone (843) 665-9166 Fax (843) 665-9167
425 S. Cashua Drive, Suite A
Florence, SC 29502

Date:

Project:

SC Highway 403 Water
Treatment Plant
Improvements

Change Order No.:

Contract No.:

URS Corporation Project No. 46423177

Description of and Reason for Change: _____

Itemization of Proposed Change and Basis for Payment

Original Contract Price.....	\$
Previous Change Orders	\$
This Change, (An Addition) (A Deduction) of.....	\$
Proposed Revised Contract Price.....	\$

Additional funds are to be provided in the following manner: _____

Extension of Contract Time Required: _____ Days.

Revised Contract Completion Date: _____.

This Change is Acceptable: _____, Contractor

By _____

Recommended: URS Corporation, Engineers

By _____

Approval of Change is Requested: _____, Owner

By _____

CONTRACT CHANGE ORDER
00603-1

46423177

SECTION 00604

EMPLOYMENT ELIGIBILITY VERIFICATION REQUIREMENTS

- A. Contractor is required to comply with all applicable State and Federal employment eligibility verification requirements including but not limited to the following:
1. By signing its bid or proposal, Contractor certifies that it will comply with the applicable requirements of Title 41, Chapter 8 of the South Carolina Code of Laws and agrees to provide to Florence County upon request any documentation required to establish either: (a) that Title 41, Chapter 8 is inapplicable both to Contractor and its subcontractors or sub-subcontractors; or (b) that Contractor and its subcontractors or sub-subcontractors are in compliance with Title 41, Chapter 8. Pursuant to Section 41-8-70, "In addition to other penalties provided by law, a person who knowingly makes or files any false, fictitious, or fraudulent document, statement, or report pursuant to this chapter is guilty of a felony, and, upon conviction, must be fined within the discretion of the court or imprisoned for not more than five years, or both." Contractor agrees to include in any contracts with its subcontractors language requiring its subcontractors to (a) comply with the applicable requirements of Title 41, Chapter 8, and (b) include in their contracts with the sub-subcontractors language requiring the sub-subcontractors to comply with the applicable requirements of Title 41, Chapter 8.
- B. Contractor is required to complete and submit the attached affidavit along with the executed contract documents.
- C. E-Verify.
1. In addition to completing and maintaining the federal employment eligibility verification form (Form I-9), Contractor must, within three business days after employing a new employee, verify the employee's work authorization through the E-Verify federal work authorization program administered by the U.S. Department of Homeland Security. Employers may no longer confirm a new employee's employment authorization with a driver's license or state identification card.
 2. Contractor shall enroll in E-Verify at www.dhs.gov/e-verify.

END OF SECTION

Attachment

CONTRACTOR AFFIDAVIT
SOUTH CAROLINA ILLEGAL IMMIGRATION REFORM ACT (Amended)

In accordance with the requirements of the South Carolina Illegal Immigration Reform Act,
 (Contractor) hereby certifies that it is currently in compliance with the
requirements of Title 41, Chapter 8 of the S. C. Code Annotated and will remain in compliance with
such requirements throughout the term of its contract with the Florence County.

The Contractor hereby acknowledges that in order to comply with requirements of S. C. Code
Annotated Section 41-8-20:

- (A) All private employers in South Carolina shall be imputed a South Carolina employment license, which permits a private employer to employ a person in this State. A private employer may not employ a person unless the private employer's South Carolina employment license and any other applicable licenses as defined in Section 41-8-10 are in effect and are not suspended or revoked. A private employer's employment license shall remain in effect provided the private employer complies with the provisions of this chapter.
- (B) All private employers who are required by federal law to complete and maintain federal employment eligibility verification forms or documents must register and participate in the E-Verify federal work authorization program, or its successor, to verify the work authorization of every new employee within three business days after employing a new employee. A private employer who does not comply with the requirements of this subsection violates the private employer's licenses.
- (C) The South Carolina Department of Employment and Workforce shall provide private employers with technical advice and electronic access to the E-Verify federal work authorization program's website for the sole purpose of registering and participating in the program.
- (D) Private employers shall employ provisionally a new employee until the new employee's work authorization has been verified pursuant to this section. A private employer shall submit a new employee's name and information for verification even if the new employee's employment is terminated less than three business days after becoming employed. If a new employee's work authorization is not verified by the federal work authorization program, a private employer must not employ, continue to employ, or reemploy the new employee.
- (E) To assist private employers in understanding the requirements of this chapter, the director shall send written notice of the requirements of this section to all South Carolina employers, and shall publish the information contained in the notice on its website. Nothing in this section shall create a legal requirement that any private employer receive actual notice of the requirements of this chapter through written notice from the director, nor create any legal defense for failure to receive notice.

- (F) If a private employer is a contractor, the private employer shall maintain the contact phone numbers of all subcontractors and sub-subcontractors performing services for the private employer. The private employer shall provide the contact phone numbers or a contact phone number, as applicable, to the director pursuant to an audit or investigation within seventy-two hours of the director's request.

The Contractor agrees to provide to the Florence County upon request any documentation required to establish the applicability of the South Carolina Illegal Immigration Reform Act (Amended) to the contractor, subcontractor or sub-subcontractor. The Contractor further agrees that it will upon request provide the Florence County with any documentation required to establish that the contractor and any subcontractors or sub-subcontractors are in compliance with the requirements of Title 41, Chapter 8 of the S. C. Code Annotated.

Date: _____

By: _____
Contractor

Title: _____

HUD FORM

SECTION 00605

BIDDER'S SECTION 3

ESTIMATED NEW HIRES (9/98)

CERTIFICATION OF BIDDER REGARDING SECTION 3
00605-1

051112F

Section 3 Information Sheet for Contractors/Businesses

What is Section 3?

Section 3 is a provision of the Housing and Urban Development (HUD) Act of 1968 that helps foster local economic development, neighborhood economic improvement, and individual self-sufficiency. The Section 3 program requires that recipients of certain financial assistance, to the greatest extent feasible, provide job training, employment, and contracting opportunities for low-income residents in connection with projects and activities in their neighborhoods.

Who are Section 3 residents?

Section 3 residents are:

- Public housing residents or
- Persons who live in the area where an assisted project is located and who have a household income that falls below income limits.

What is a Section 3 business concern?

A business that:

- Is 51 percent or more owned by Section 3 residents;
- Employs Section 3 residents for at least 30 percent of its full-time, permanent staff; or
- Provides evidence of a commitment to subcontract to Section 3 business concerns, 25 percent or more of the dollar amount of the awarded contract.

What types of economic opportunities should be made available under Section 3?

- Job training
- Employment
- Contracts

Examples of Opportunities include:

<ul style="list-style-type: none"> • Accounting • Architecture • Appliance repair • Bookkeeping • Bricklaying • Carpentry • Carpet Installation • Catering • Cement/Masonry • Computer/Information • Demolition • Drywall 	<ul style="list-style-type: none"> • Electrical • Elevator Construction • Engineering • Fencing • Florists • Heating • Iron Works • Janitorial • Landscaping • Machine Operation • Manufacturing 	<ul style="list-style-type: none"> • Marketing • Painting • Payroll Photography • Plastering • Plumbing • Printing Purchasing • Research • Surveying • Tile setting • Transportation • Word processing
---	---	---

Who receives priority under Section 3?

For training and employment:

- Persons in public and assisted housing
- Persons in the area where the HUD financial assistance is spent
- Participants in HUD Youthbuild programs
- Homeless persons

For contracting:

- Businesses that meet the definition of a Section 3 business concern

How can businesses find Section 3 residents to work for them?

Businesses can recruit Section 3 residents in public housing developments and in the neighborhoods where the HUD assistance is being spent. Effective ways of informing residents about available training and job opportunities are:

- Contacting resident organizations, local community development and employment agencies
- Distributing flyers
- Posting signs
- Placing ads in local newspapers

Are recipients, contractors, and subcontractors required to provide long-term employment opportunities, not simply seasonal or temporary employment?

Recipients are required, to the greatest extent feasible, to provide all types of employment opportunities to low and very low-income persons, including permanent employment and long-term jobs.

Recipients and contractors are encouraged to have Section 3 residents make up at least 30 percent of their permanent, full-time staff.

A Section 3 resident who has been employed for 3 years may no longer be counted towards meeting the 30 percent requirement.

This encourages recipients to continue hiring Section 3 residents when employment opportunities are available.

What if it appears an entity is not complying with Section 3?

There is a complaint process. Section 3 residents, businesses, or a representative for either may file a complaint if it seems a recipient is violating Section 3 requirements are being on a HUD-funded project.

Will HUD require compliance?

Yes. HUD monitors the performance of contractors, reviews annual reports from recipients, and investigates complaints. HUD also examines employment and contract records for evidence that recipients are training and employing Section 3 residents and awarding contracts to Section 3 businesses.

Section 3 Business Concern Certification Form

NAME OF BUSINESS: _____
ADDRESS OF BUSINESS: _____
CONTACT PERSON: _____ TITLE: _____
TELEPHONE #: _____ CELL #: _____

MUST PROVIDE EVIDENCE OF SECTION 3 STATUS PRIOR TO CONTRACT AWARD

The Bidder certifies that it is a Section 3 Business Concern based on:

- _____ Business is owned, at least 51% by Section 3 Residents.
 - Provide copy of resident lease, evidence of participation in a public assistance program, or signed Certification for Section 3 Resident
 - Provide business license number: _____
- _____ At least 30% of their permanent, full-time employees are currently Section 3 Residents or were Section 3 Residents within the past 3 years.
 - Provide List of Full-time Employees (Form 2)
 - Provide signed Certification for Section 3 Residents (Form 3)
- _____ Commitment to subcontract 25% of the dollar award to qualified Section 3 Business Concerns. (Only applicable for Prime Contractors)

I hereby certify that the information provided by me to be true and correct, and understand falsification of any information could subject me to disqualification from participation and punishment under the law.

Owner Signature

Date

Print

BIDDER'S PROPOSED SECTION 3 CONTRACT/SUBCONTRACTS

Type of Contract (Business or Profession)	Total No.	Total Approx. Dollar Amt.	Estimated No. of Contracts to Section 3 Businesses	Est. Dollar Amt. to Section 3 Businesses

Section 3 Business Concern

1. A business that is 51% or more owned by section 3 residents, or
2. A business whose permanent full time work force is at least 30% section 3 residents or,
3. A business which contracts a dollar amount of all subcontracts with businesses as defined in numbers 1 and 2 above.

Company_____
Project Name_____
Project Number_____
Person Completing Form_____
Date

CONTRACTOR'S SECTION 3 BUSINESS UTILIZATION REPORT

Project Number: _____

Total Dollar Amount of Contract _____

Name of Prime Contractor: _____

Address: _____

Federal Identification
No: _____

Name of Subcontractor or Vendor	Sect. 3 Bsns. *	Address and Phone No.	Trade/Service or Supply	Contract Amount	Award Date	Competitive or Negotiated Bid	Federal Identification No.

* Check if a Section 3 business concern.

TOTAL DOLLAR AMOUNT AWARDED TO SECTION 3 BUSINESSES: \$ _____

Section 3 Business Concern

1. A business that is 51% or more owned by section 3 residents, or
2. A business whose permanent full time work force is at least 30% section 3 residents or,
3. A business which contracts a dollar amount of all subcontracts with businesses as defined in numbers 1 and 2 above.

CERTIFICATION OF BIDDER REGARDING SECTION 3

00605-6

BIDDER'S SECTION 3 ESTIMATED NEW HIRES

Job Category	Total Estimated Positions Needed for Project	No. Positions Occupied by Permanent Employees	Number of Positions Not Occupied	Number of Positions to be Filled with Section 3 Residents
Officer/Supervisors				
Professionals				
Technical				
Hsq. Sales/Rental Mgmt.				
Office/Clerical				
Service Workers				
Others				
TRADE:				
Journeyman				
Apprentices				
Trainees				
Others				
TRADE:				
Journeyman				
Apprentices				
Trainees				
Others				

Section 3 Resident

Individual residing in a public housing project or within the non-metropolitan county in which the project is located and whose income does not exceed 80% of the higher of the median income, adjusted by family size, for the county of residence or the non-metropolitan area of the state.

Company

Project Name

Project Number

Person Completing Form

Date

CONTRACTOR'S SECTION 3 NEW HIRES REPORT

Job Category	Total Positions Employed on the Project	No. Positions Occupied by Permanent Employees	Number of Positions Not Occupied	Number of Positions Filled with Section 3 Residents
Officer/Supervisors				
Professionals				
Technical				
Hsq. Sales/Rental Mgmt.				
Office/Clerical				
Service Workers				
Others				
TRADE:				
Journeyman				
Apprentices				
Trainees				
Others				
TRADE:				
Journeyman				
Apprentices				
Trainees				
Others				

Section 3 Resident

Individual residing in a public housing project or within the non-metropolitan county in which the project is located and whose income does not exceed 80% of the higher of the median income, adjusted by family size, for the county of residence or the non-metropolitan area of the state.

 Company

 Project Name

 Project Number

 Person Completing Form

 Date

HUD FORM

SECTION 00606.2

CERTIFICATION OF BIDDER REGARDING
EQUAL EMPLOYMENT OPPORTUNITY

U. S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT

SECTION 00606
CERTIFICATION OF BIDDER REGARDING
EQUAL EMPLOYMENT OPPORTUNITY

INSTRUCTIONS

This certification is required pursuant to Executive Order 11246 (30 F. R. 12319-25). The implementing rules and regulations provide that any bidder or prospective contractor, or any of their proposed subcontractors, shall state as an initial part of the bid or negotiations of the contract whether it has participated in any previous contract or subcontract subject to the equal opportunity clause; and, if so, whether it has filed all compliance reports due under applicable instructions.

Where the certification indicates that the bidder has not filed a compliance report due under applicable instructions, such bidder shall be required to submit a compliance report within seven calendar days after bid opening. No contract shall be awarded unless such report is submitted.

CERTIFICATION BY BIDDER

Bidder's Name: _____

Address and Zip Code: _____

1. Bidder has participated in a previous contract or subcontract subject to the Equal Opportunity Clause.
Yes ☐ No ☐ (If answer is yes, identify the most recent contract.)
2. Compliance reports were required to be filed in connection with such contract or subcontract.
Yes ☐ No ☐ (If answer is yes, identify the most recent contract.)
3. Bidder has filed all compliance reports due under applicable instructions, including SF-100.
Yes ☐ No ☐ None Required ☐
4. If answer to item 3 is "No," please explain in detail on reverse side of this certification.

Certification - The information above is true and complete to the best of my knowledge and belief.

Name and Title of Signer (Please Type)

Signature

Date

CERTIFICATION OF BIDDER REGARDING EQUAL
EMPLOYMENT OPPORTUNITY

00606.2

00606.2-2

SECTION 00606.5
NOTICE TO PROCEED

TO: _____

DATE: _____

PROJECT DESCRIPTION: SC Highway 403 Water Treatment Plant Improvements

OWNER: Florence County

URS CORPORATION PROJECT NO: 46423177

You are hereby notified to commence WORK in accordance with the Agreement dated _____, 20__, on or before _____, 20__, and you are to complete the WORK within 270 consecutive calendar days thereafter.

The date of completion of all work is therefore: _____, 20__.

Florence County

By: _____

Title: _____

Acceptance of Notice

Receipt of the above NOTICE TO PROCEED is hereby acknowledged by _____
_____ this the ____ day of _____, 20__.

By: _____

Title: _____

PARTIAL PAYMENT ESTIMATE <small>DISTRIBUTE ORIGINALS TO THE FOLLOWING:</small>				CONTRACT NO. _____	
<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <input type="checkbox"/> Owner <input type="checkbox"/> Contractor <input type="checkbox"/> URS Corporation </div> <div style="text-align: center;"> <input type="checkbox"/> COG <input type="checkbox"/> Other </div> </div>				PARTIAL PAY ESTIMATE NO. _____	
				PAGE _____ OF _____	
OWNER: 3		CONTRACTOR:		PERIOD OF ESTIMATE _____ TO _____	
CONTRACT CHANGE ORDER SUMMARY				ESTIMATE	
NO.	APPROVAL DATE	AMOUNT			
		ADDITIONS	DEDUCTIONS		
				1. Original Contract 2. Change Orders 3. Revised Contract (1+2) 4. Work Completed 5. Stored Materials 6. Subtotal (4+5) 7. Retainage 8. Previous Payments ... 9. Amount Due (6-7-8) ... * Detailed Breakdown Attached	
TOTALS		\$0.00	\$0.00		
NET CHANGE					
CONTRACT TIME					
ORIGINAL (days) _____ REVISED _____ REMAINING _____		ON SCHEDULE <input type="checkbox"/> YES <input type="checkbox"/> NO		STARTING DATE _____ PROJECTED COMPLETION _____	
CONTRACTOR'S CERTIFICATION: The undersigned Contractor certifies that to the best of their knowledge, information and belief the work covered by this payment has been completed in accordance with the contract documents, that all amounts have been paid by the contractor for work for which previous payment estimates was issued and payments received from the owner, and that current payment shown herein is now due.				ARCHITECT OR ENGINEER'S CERTIFICATION: The undersigned certifies that to the best of their knowledge and belief, the quantities shown in this estimate are correct and the work has been performed in accordance with the contract documents. Based on periodic but less than full time field representation, to the best of our information the quantities, items and schedule of values, work completed and material and equipment delivered are accurate as indicated on this request for payment. Some defects or problems with construction items may not be determined until final testing and operation of the system is performed. The Engineer cannot be held liable for approval for partial payments for the installation of these items from which the evidence of defects or problems were not determined until after the request for payment was approved.	
Contractor		Engineer URS Corporation			
By _____		By _____			
Date _____		Date _____			
APPROVED BY OWNER:					
Owner		Florence County			
By _____					
Date _____					

PAY ESTIMATE

[illegible]

SECTION 00690
CONTRACTOR'S AFFIDAVIT

The State of _____ Date: _____

The County of _____

The City/Town of _____

(Officer's Name) (Officer's Title) of _____
(Contractor's Name)

being duly sworn, deposes and says that _____
(Contractor's Name)

has furnished all labor and material entering into the _____ Water Treatment Plant

_____ Improvements _____ at _____ the SC 403 Water Treatment Plant
(Kind of Work) (Name and Location of Plant or Work)

called for in the Contract Documents dated _____ with _____

_____ Florence County _____
(Owner's Name)

_____ states further that this officer has full knowledge
(Contractor's Name)
of all obligations for such labor and materials which have entered into and become part of that certain project known and designated above, and that this officer further deposes and says that all debts and other obligations for such labor and materials have been fully and completely paid for in good and lawful money of the United States of America and that there are no suits for damages against them proceeding, prospective and/or that there are no suits for damages against them proceeding, prospective, or otherwise, in consequence of their operations on the above said project.

The said _____ will hold the Owners,
(Contractor's Name)

_____ blameless of any and all mechanic's liens that
(Owner's Name)
may be hereafter entered or filed for record, so as to constitute charge against said premises for work or labor done or materials furnished by them.

IN WITNESS HEREOF, this officer has heretofore put his hand and seal:

(Officer's Name) (Seal)
I, _____, Notary Public in and for the above named County and State
do hereby certify that _____ personally known to me to be the affiant in the
(Officer's Name)
foregoing Affidavit, personally appeared before me this day and, having been duly sworn, deposes and says that the facts set forth in the above Affidavit are true and correct.

WITNESS my hand and seal this _____ day of _____, 20__.

(Seal)

Notary Public for the State of _____
My Commission Expires: _____

GENERAL CONDITIONS

1. CONTRACT AND CONTRACT DOCUMENTS. The plans, specifications and addenda, hereinafter enumerated in Paragraph 1 of Supplemental General Conditions, shall form part of this contract and the provisions thereof shall be as binding upon the parties hereto as if they were herein fully set forth. The table of contents titles, heading, running headlines and marginal notes contained herein and in said documents are solely to facilitate reference to various provisions of the contract documents and in no way affect, limit or cast light on the interpretations of the provisions to which they refer.

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2. DEFINITIONS. The following terms as used in this contract are respectively defined as follows:
- (a) Contractor. A person, firm or corporation with whom the contract is made by the Owner.
 - (b) Subcontractor. A person, firm or corporation supplying labor and materials, or only labor, for work at the site of the project for and under separate contract or agreement with the Contractor.
 - (c) Work on or at the Project. Work to be performed at the location of the project, including the transportation of materials and supplies to or from the location of the project by employees of the Contractor and any Subcontractor.
3. ADDITIONAL INSTRUCTIONS AND DETAIL DRAWINGS. The Contractor will be furnished additional instructions and detail drawings as necessary to carry out the work included in the Contract. The additional drawings and instructions thus supplied to the Contractor will coordinate with the Contract Documents and will be so prepared that they can be reasonably interpreted as part thereof. The Contractor shall carry on the work in accordance with the additional detail drawings and instructions. The Contractor and the Engineer will prepare jointly:
- (a) A schedule fixing the dates at which special detail drawings will be required. Such drawings, if any, to be furnished by the Engineer in accordance with said schedule; and
 - (b) A schedule fixing the respective dates for the submission of shop drawings, the beginning of manufacture, testing and installation of materials, supplies, and equipment, and the completion of the various parts of the work. Each such schedule to be subject to change from time to time in accordance with the progress of the work.
4. SHOP DRAWINGS AND SAMPLES. After checking and verifying, the Contractor shall submit to the Engineer for approval in accordance with the accepted schedule of Paragraph 3, and in conformance with Section 01340, all Shop Drawings.
- 4.1 Samples. Contractor shall also submit to the Engineer for approval, all samples required by the Contract Documents in conformance with Section 01340.
- 4.2 Deviations. At the time of each submission, Contractor shall in writing call the Engineer's attention to any deviations that the Shop Drawings or samples may have from the requirements of the contract documents.
- 4.3 Engineer's Review. Engineer will review and approve with reasonable promptness Shop Drawings and samples, but his review and approval shall be only for conformance with the design concept of the project and for compliance with the information given in the Contract Documents. The approval of a separate item as such will not indicate approval of the assembly in which the item functions. Contractor shall make any corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and resubmit new samples until approved. Contractor shall direct specific attention in writing or on resubmitted Shop Drawings to revisions other than the corrections called for by Engineer on previous submissions. Contractor's stamp of approval on any Shop Drawing or sample shall constitute a representation to Owner and Engineer that Contractor has either determined and verified all quantities, dimensions, field construction criteria, materials, catalog numbers and similar data or he assumes full responsibility for doing so, and that he has reviewed or coordinated each Shop Drawing or sample with the requirements of the work and Contract Documents.

- 4.4 Contractor's Records. Where a Shop Drawing or sample submission is required by the Specifications, no related work shall be commenced until the submission has been approved by Engineer. A copy of each approved Shop Drawing and each approved sample shall be kept in good order by Contractor at the site and shall be available to Engineer.
- 4.5 Contractor's Responsibility. Engineer's approval of Shop Drawings or sample shall not relieve Contractor from his responsibility for any deviations from the requirements of the Contract Documents unless Contractor has in writing called the Engineer's attention to such deviation at the time of submission and Engineer has given written approval to the specific deviation, nor shall any approval by Engineer relieve Contractor from responsibility for errors or omissions in the Shop Drawings.
5. MATERIALS, SERVICES AND FACILITIES shall be furnished by the Contractor.
- (a) It is understood that except as otherwise specifically stated in the Contract Documents, the Contractor shall provide and pay for all materials, labor, tools, equipment, water, gas, lights, power, transportation, superintendence, taxes, insurance, temporary construction of every nature, and all other services and facilities of every nature whatsoever necessary to execute, complete and deliver the work within the specified time.
- (b) Any work necessary to be performed after regular working hours, on Sundays, or legal holidays, shall be performed without additional expense to the Owner.
6. CONTRACTOR'S TITLE TO MATERIALS. No materials or supplies for the work shall be purchased by the Contractor or by any subcontractor subject to any chattel mortgage or under a conditional sale contract or other agreement by which an interest is retained by the seller. The Contractor warrants that he has good title to all materials and supplies used by him in the work, free from all liens, claims or encumbrances.
7. INSPECTION AND TESTING OF MATERIALS. Unless otherwise specifically provided for in the specifications, the inspection and testing of material and finished articles to be incorporated in the work at the site shall be made by bureaus, laboratories, or agencies approved by the Owner. The cost of such inspection and testing shall be paid by the Contractor.
- 7.1 Certification by Contractor. Where the detailed specifications call for certified copies of mill or shop tests to establish conformance of certain materials with the specifications, it shall be the responsibility of the Contractor to assure delivery of such certifications to the Owner. No materials or finished articles shall be incorporated in the work until such materials and finished articles have passed the required tests. The Contractor shall promptly segregate and remove rejected material and finished articles from the site of work.
- 7.2 Guaranty. The testing and approval of materials by the laboratory, or laboratories, shall not relieve the contractor of a guarantee of workmanship and materials as called for in paragraph entitled "General Warranty for One Year After Completion of Contract" herein. The Contractor may, at his option and at his own expense, cause such other tests to be conducted as he may deem necessary to assure suitability, strength and durability of any material or finished article.
8. "OR EQUAL" CLAUSE. The phrase "or equal" shall be construed to mean that material or equipment will be acceptable only when, in the judgement of the Engineer, they are composed of parts of equal quality, or equal workmanship and finish, designed and constructed to perform or accomplish the desired result as efficiently as the indicated brand, pattern, grade, class, make or model. Written approval will be obtained from the Engineer prior to installation.

9. PATENTS. The Contractor shall hold and save the Owner and its officers, agents, servants, and employees harmless from liability of any nature or kind, including cost and expenses for, or on account of, any patented or unpatented invention, process, article, or appliance manufactured or used in the performance of the contract, including its use by the Owner, unless otherwise specifically stipulated in the Contract Documents. If the Contractor uses any design, device or material covered by letter patent, or copyright, he shall provide for such use by suitable agreement with the Owner of such patented or copyrighted design, device or material. It is mutually agreed and understood that, without exception, the contract prices shall include all royalties or costs arising from the use of such design, device or material, in any way involved in the work. The contractor and/or his sureties shall indemnify and save harmless the Owner of the project from any and all claims for infringements by reason of the use of such patented or copyrighted design, device or materials or any trademark of copyright in connection with work agreed to be performed under this contract, and shall indemnify the Owner for any cost, expense or damage which it may be obliged to pay by reason of such infringement at any time during the prosecution of the work or after completion of the work.
10. SURVEYS, LAWS AND REGULATIONS. The Contractor shall comply with the following:
- 10.1 Construction staking shall be in accordance with the requirements of the Section 01050 - Field Engineering.
- 10.2 Laws and Regulations. The Contractor shall keep himself fully informed of all laws, ordinances and regulations of State, City and County in any manner affecting those engaged or employed in the work, or the materials used in the work, or in any way affecting the conduct of the work, and of all orders and decrees of bodies of tribunals having any jurisdiction or authority over same. If any discrepancy or inconsistency should be discovered in this contract, or in the drawings or specifications herein referred to, in relation to any such law, ordinance, regulation, order or decree, he shall forthwith report the same in writing to the Owner. He shall at all times himself observe and comply with all such existing and future laws, ordinances and regulations, (to the extent that such requirements do not conflict with Federal Laws or regulations) and shall protect and indemnify the Owner and its agents against any claims or liability arising from or based on the violation of any such law, ordinance, regulation, order or decree, whether by himself or by his employees.
11. CONTRACTOR'S OBLIGATIONS. The Contractor shall, in good workmanlike manner, do and perform all work and furnish all supplies and materials, machinery, equipment, facilities and means, except as herein otherwise expressly specified, necessary or proper to perform and complete all the work required by this contract, within the time herein specified, in accordance with provisions of this contract and said specifications, and in accordance with the plans and drawings covered by this contract and any and all supplemental plans and drawings and in accordance with the directions of the Engineer as given from time to time during the progress of the work. He shall furnish, erect, maintain and remove such construction plant and such temporary works as may be required. The Contractor shall observe, comply with, and be subject to all terms, conditions, requirements and limitations of the contract and specifications, and shall do, carry on and complete the entire work to the satisfaction of the Engineer and the Owner.
12. WEATHER CONDITIONS. In the event of temporary suspension of work or during inclement weather, or whenever the Engineer shall direct, the Contractor will, and will cause his subcontractors to protect carefully his and their work and materials against damage or injury from the weather. If, in the opinion of the Engineer, any work or materials shall have been damaged or injured by reason of failure on the part of the Contractor or any of his Subcontractors to so protect its work, such materials shall be removed and replaced at the expense of the Contractor.

13. PROTECTION OF WORK AND PROPERTY, EMERGENCY. The Contractor shall at all times safely guard the Owner's property from injury or loss in connection with this contract. He shall at all times safely guard and protect his own work and that of adjacent property from damage. The Contractor shall replace or make good any such damage, loss or injury unless such be caused directly by errors contained in the contract or by the Owner or by his duly authorized representatives. In case of emergency which threatens loss or injury of property and/or safety of life, the Contractor will be allowed to act, without previous instructions from the Engineer, in a diligent manner. He shall notify the Engineer immediately thereafter. Any claim for compensation by the Contractor due to such extra work shall be promptly submitted to the Engineer for approval. Where the Contractor has not taken action but has notified the Engineer of an emergency threatening injury to persons or damage to the work or any adjoining property, he shall act as instructed or authorized by the Engineer. The amount of reimbursement claimed by the Contractor on account of any emergency action shall be determined in the manner provided in the paragraph entitled "Changes in Work" of these specifications.
14. INTERPRETATIONS. If any person contemplating submitting a bid for the proposed contract is in doubt as to the true meaning of any part of these proposed contract documents, he may submit to the Engineer a written request for an interpretation thereof. The person submitting the request will be responsible for its prompt and actual delivery. Any interpretation of such documents will be made only by addendum duly issued, and a copy of such addendum will be mailed or delivered to each person receiving a set of such documents. The Owner will not be responsible for any other explanation or interpretation of such documents which anyone presumes to make on behalf of the Owner before expiration of the ultimate time set for the receipt of bids.
15. REPORTS, RECORDS AND DATA. The Contractor shall submit to the Owner such schedule of quantities and costs, progress schedules, payrolls, reports, estimates, records and other data as the Owner may request concerning work performed or to be performed under this contract.
16. SUPERINTENDENCE BY CONTRACTOR. The Contractor shall employ only competent and skilled personnel on the work. The Contractor shall have a competent Superintendent or Foreman present all times when the work is in progress, who shall have full authority to act for the Contractor. It is understood that such representatives shall be acceptable to the Engineer and shall be one who can be continued in that capacity for the particular job involved unless he ceases to be on the Contractor's payroll. The Contractor shall, upon demand from the Engineer, immediately remove any superintendent, foreman or workman whom the Engineer may consider incompetent or undesirable.
17. CHANGES IN WORK. No changes in the work covered by the approved contract documents shall be made without having prior written approval of the Owner. Charges or credits for the work covered by the approved change shall be determined by one or more, or a combination of, the following methods:
- (a) Unit bid prices previously approved.
 - (b) An agreed lump sum.
18. EXTRAS. Without invalidating the contract, the Owner may order extra work or make changes by altering, adding to or deducting from the work, the contract sum being adjusted accordingly, and the consent of the surety being first obtained where necessary or desirable. All the work of the kind bid upon shall be paid for at the price stipulated in the proposal, and no claims for any extra work or materials shall be allowed unless the work is ordered in writing by the Owner, or the Engineer acting officially for the Owner, and the price is stated in such order. Extra work shall be performed only upon the execution of authorized change orders as set forth in the preceding paragraph.

19. TIME FOR COMPLETION AND LIQUIDATED DAMAGES. It is hereby understood and mutually agreed by and between the Contractor and the Owner that the date of beginning and the time for completion as specified in the contract of the work to be done hereunder are essential conditions of this contract; and it is further mutually understood and agreed that the work embraced in this contract shall be commenced on a date to be specified in the Notice to Proceed.
- 19.1 Regular Prosecution of Work. The Contractor agrees that said work shall be prosecuted regularly, diligently and uninterruptedly at such rate of progress as will ensure full completion thereof within the time specified. It is expressly understood and agreed, by and between the Contractor and the Owner, that the time for completion of the work described herein is a reasonable time for completion of same, taking into consideration the average climatic range and usual industrial conditions prevailing in this locality.
- 19.2 Liquidated Damages. If the Contractor shall neglect, fail, or refuse to complete the work within the time herein specified, or any proper extensions thereof granted by the Owner, then the Contractor does hereby agree, as a part of consideration for the awarding of this contract, to pay to the Owner the amount specified in the contract not as a penalty but as liquidated damages for such breach of contract as hereinafter set forth, for each and every calendar day that the Contractor shall be in default after the time stipulated in the contract for completing the work. The said amount is fixed and agreed upon by and between the Contractor and the Owner because of the impracticality and extreme difficulty of fixing and ascertaining the actual damages the Owner would in such event sustain, and said amount is agreed to be the amount of damages which the Owner would sustain and said amount shall be retained from time to time by the Owner from current periodic estimates.
- 19.3 Extension of Time for Completion. It is further agreed that time is of the essence of each and every portion of this contract and of the specifications wherein a definite and certain length of time is fixed for the performance of any act whatsoever; and where under the contract an additional time is allowed for the completion of any work, the new time limit fixed by such extension shall be of the essence of this contract. Provided that the Contractor shall not be charged with liquidated damages or any excess cost when the delay in completion of the work is due:
- (a) To any preference, priority or allocation order duly issued by the Government.
 - (b) To unforeseeable cause beyond the control and without the fault or negligence of the Contractor, including but not restricted to, acts of God, or of the public enemy, acts of the Owner, acts of another contractor in the performance of a contract with the Owner; fires, floods, epidemics, quarantine restrictions, strikes, freight embargos, unusually severe weather, and;
 - (c) To any delays of subcontractors or suppliers occasioned by any of the causes specified in subsections (a) and (b) of this article.

Provided further, that the Contractor shall, within seven (7) days from the beginning of such delay, unless the Owner shall grant a further period of time prior to the date of final settlement of the contract, notify the Owner in writing of the causes of delay, who shall ascertain the facts and extent of delay and notify the Contractor within a reasonable time of its decision in the matter, and grant such extension of time as the Owner shall deem suitable and just.

20. CORRECTION OF WORK. All work, all materials, whether incorporated in the work or not, all processes of manufacturer, and all methods of construction shall be at all times and places subject to the inspection of the Engineer, who shall be the final judge of the quality and suitability of the work, materials, processes of manufacture, and methods of construction of the purposes for which they are used. Should they fail to meet his approval, they shall be forthwith reconstructed, made good, replaced and/or corrected, as the case may be, by the Contractor at his own expense. Rejected material shall immediately be removed from the site. If, in the opinion of the Engineer, it is undesirable to replace any defective or damaged materials or to reconstruct or correct any portion of the work injured or not performed in accordance with the contract documents, the compensation to be paid to the Contractor hereunder shall be reduced by such amount as, in the judgment of the Engineer, shall be equitable.
21. SUBSURFACE CONDITIONS FOUND DIFFERENT. Should the Contractor encounter subsurface and/or latent conditions at the site materially differing from those shown on the plans or indicated in the specifications, he shall immediately give notice to the Engineer of such conditions before they are disturbed. The Engineer will thereupon promptly investigate the conditions, and if he finds that they materially differ from those shown on the plans or indicated in the specifications, he will at once make such changes in the plans and/or specifications as he may find necessary; any increase or decrease of cost resulting from such changes to be adjusted in the manner provided in Paragraph 17 of these specifications.
- (a) Where no specific subsurface conditions are indicated or specified, no increase in cost will be considered in regards to subsurface conditions encountered.
22. CLAIMS FOR EXTRA COST. No claim for extra work or cost shall be allowed unless the same was done in pursuance of a written order of the Engineer, as aforesaid, and the claim presented with the first estimate after the change or extra work is done. When work is performed under the terms of subparagraph 17(c) of these specifications, the Contractor shall furnish satisfactory bills, payrolls and vouchers covering all items of cost and when requested by the Owner, give the Owner access to accounts relating thereto.
23. RIGHT OF OWNER TO TERMINATE CONTRACT. In the event that any of the provisions of this contract are violated by the Contractor or by any of his Subcontractors, the Owner may serve written notice upon the Contractor and the surety of its intention to terminate the contract, such notices to contain the reasons for such intention to terminate the contract, and unless within 10 days after the serving of such notice upon the Contractor, such violation or delay shall cease and satisfactory arrangement or correction be made, the contract shall, upon the expiration of said 10 days, cease and terminate. In the event of any such termination, the Owner shall immediately serve notice thereof upon the surety and the Contractor, and the surety shall have the right to take over and perform the contract; provided, however, that if the surety does not commence performance thereof within 10 days from the date of mailing to such surety of notice of termination, the Owner may take over the work and prosecute same to completion by contract or by force account for the account and at the expense of the Contractor, and the Contractor and his surety shall be liable to the Owner for any excess cost occasioned the Owner thereby, and in such event the Owner may take possession of and utilize in completing the work such materials, appliances and plant as may be on the site of the work and necessary therefore. If the Contractor should die, be declared an incompetent, be declared bankrupt or insolvent, make an assignment for the benefit of creditors during the term of his contract, the Owner may terminate the contract in the manner and under the procedure set forth above with the exception that no notices to the Contractor shall be required, but in lieu thereof the Owner must make a reasonable effort to notify the estate of the Contractor, his guardian, assignee, or legal representative of the intention to terminate and fact of termination, if there is any such guardian, assignee, or legal representative at the time the Owner desires to terminate.

24. CONSTRUCTION SCHEDULE AND PERIODIC ESTIMATES. Immediately after execution and delivery of the contract and before the first partial payment is made, the Contractor shall deliver to the Owner an estimated construction progress schedule in form satisfactory to the Owner, showing the proposed dates of commencement and completion of each of the various subdivisions of work required under the contract documents and the anticipated amount of each monthly payment that will become due the Contractor in accordance with the progress schedule.
- 24.1 Contractor's Estimate. The Contractor shall also furnish:
- (a) A detailed estimate, giving a complete breakdown of the contract price; and
 - (b) Periodic itemized estimates of work done for the purpose of making partial payments thereon. The costs employed in making up any of these schedules will be used only for determining the basis of partial payments and will not be considered as fixing a basis for addition to or deductions from the contract price.
- 24.2 Equipment Delivery Schedule. The Contractor shall also prepare a schedule of anticipated shipping dates for materials and equipment. It is intended that equipment and materials be so scheduled as to arrive at the job site just prior to time for installation to prevent excessive materials on hand for inventory and the necessity for extensive storage facilities at the job site.
25. PAYMENTS TO CONTRACTOR shall be made according to the following:
- (a) Payments to the Contractor will be made within thirty (30) days upon receipt of a duly certified approved estimate of the work performed during the preceding calendar month under this contract, but to insure the proper performance of this contract, the Owner will retain a portion of each estimate until final completion and acceptance of all work covered by this contract in accordance with the following:
 - 1. Retention of up to 10 percent of payment claimed until construction is complete, or as follows:
 - 2. After construction is 50 percent complete, reduction of the retainage to 5 percent of the payment claimed, provided that the contractor is making satisfactory progress and there is no specific cause for greater withholding.
 - 3. When the project is substantially complete (operational or beneficial occupancy), the retained amount may be further reduced below 5 percent to only that amount necessary to assure completion.
 - 4. The Owner will accept a cash bond or irrevocable letter of credit if offered in lieu of cash retainage under (2), and will accept a cash bond or irrevocable letter of credit if offered in lieu of cash retainage under (3).
 - 5. The Owner may reinstate up to ten (10) percent retainage if the Owner determines, at its discretion, that the contractor is not making satisfactory progress or there is other specific cause for such retainage.
 - (b) In preparing estimates, the material delivered on the site and preparatory work done may be taken into consideration.
 - (c) All material and work covered by partial payments shall thereupon become the sole property of the Owner, but this provision shall not be construed as relieving the Contractor from the sole responsibility for the care and protection of materials and work upon which payments have been made or the restoration of any damaged work, or as a waiver of the right of the Owner to require the fulfillment of all the terms of the contract.

- 25.1 Owner's Right to Withhold Certain Amounts and Make Application Thereof. The Contractor agrees that he will indemnify and save the Owner harmless from all claims growing out of the lawful demands of subcontractors, laborers, workmen, mechanics, materialmen, and furnishers of machinery and parts thereof, equipment, power tools, and all supplies, including commissary, incurred in the furtherance of the performance of this contract. The Contractor shall, at the Owner's request, furnish satisfactory evidence that all obligations of the nature hereinabove designated have been paid, discharged, or waived. If the Contractor fails to do so, then the Owner may, after having served written notice on the Contractor, either pay unpaid bills, of which the Owner has written notice, direct, or withhold from the Contractor's unpaid compensation a sum of money deemed reasonably sufficient to pay any and all such lawful claims until satisfactory evidence is furnished at all liabilities have been fully discharged whereupon payment to the Contractor shall be resumed in accordance with the terms of this contract, but in no event shall the provisions of this sentence be construed to impose any obligations upon the Owner to either the Contractor or his surety. In paying any unpaid bills of the Contractor, the Owner shall be deemed the agent of the Contractor, and any payment so made by the Owner shall be considered as a payment made under the contract by the Owner to the Contractor, and the Owner shall not be liable to the Contractor for any such payment made in good faith.
26. ACCEPTANCE OF WORK AND FINAL PAYMENT. Before final acceptance of the work and payment to the Contractor of the percentage retained by the Owner, the following requirements shall be complied with:
- (a) Final Construction Review. Upon notice from the Contractor that his work is completed, the Engineer will make a final construction review of the work and shall notify the Contractor of all instances where his work fails to comply with the contract drawings and specifications, as well as any defects he may discover. The Contractor shall immediately make such alterations as are necessary to make the work comply with the contract drawings and specifications, and to the satisfaction of the Engineer.
 - (b) Operating Test. After the alterations for compliance with the contract drawings and specifications have been made, and before acceptance of the whole of any part of the work, it shall be subjected to test to determine that it is in accordance with the contract drawings and specifications. The Contractor shall maintain all work in first-class conditions for a thirty (30) day operating period after the work has been completed as a whole, the final construction review has been made, and the Engineer has notified the Contractor in writing that the work has been finished to his satisfaction. The retained percentage as provided herein will not become due or payable to the Contractor until after the thirty (30) day operating period has expired.
 - (c) Cleaning Up. Before the work is considered as complete, all rubbish and unused material due to or connected with the construction must be removed and the premises left in a condition satisfactory to the Owner. Streets, curbs, crosswalks, pavements, sidewalks, fences and other public and private property disturbed or damaged should be restored to their former conditions. Final acceptance will be withheld until such work is finished.
 - (d) Liens. Final acceptance of the work will not be granted and the retained percentage will not be due or payable until the Contractor has furnished the Owner proper and satisfactory evidence under oath that all claims for labor and material employed or used in the construction of the work under this contract have been settled, and that no legal claims can be filed against the Owner for such labor or material.

- (e) Final Estimate. Upon completion of all cleaning up, alterations and repairs required by the final construction review or operating test, the satisfactory completion of the operating test, and upon submitting proper and satisfactory evidence to the Owner that all claims have been settled, the Engineer shall then prepare his final estimate. After review and approval of the final estimate by the Engineer and the Owner, the payment shall then become due.
27. ACCEPTANCE OF FINAL PAYMENT AS RELEASE. The acceptance by the Contractor of final payment shall be and shall operate as a release to the Owner of all claims and all liability to the Contractor for all things done or furnished in connection with this work and for every act and neglect of the Owner and others relating to or arising out of this work. No payment, final or otherwise, shall operate to release the Contractor or his sureties from any obligations under this contract or the performance and payment bond.
28. PAYMENTS BY CONTRACTOR. The Contractor shall pay:
- (a) For all transportation and utility services not later than the 20th day of the calendar month following that in which services are rendered;
 - (b) For all materials, tools, and other expendable equipment to the extent of ninety (90) percent of the cost thereof not later than the 20th day of the calendar month following that in which such materials, tools, and equipment are delivered at the site of the project, and the balance of the cost thereof not later than the 30th day following completion of that part of the work in or on which such materials, tools, and equipment are incorporated or used; and
 - (c) To each of the subcontractors not later than the 5th day following each payment to the Contractor, the respective amounts allowed the Contractor on account of the work performed by his subcontractors to the extent of each subcontractor's interest therein.
29. INSURANCE. The Contractor shall procure and maintain during the life of this contract, whether such operation be by himself or by a subcontractor or anyone directly or indirectly employed by either of them, such insurance as required by statute and/or ordinance to adequately protect the Owner from any claims or damages, including bodily injury or death, which may arise from them during operations under this contract.
- 29.1 Limits of Liability. Insurance shall be obtained for not less than the limits of liability as specified in Section 3 of the attached Supplemental General Conditions.
- 29.2 Certificates of Insurance. The Contractor shall furnish the Owner, if requested, certificates showing the type, amount, class of operations covered, effective dates and dates of expiration of the policies. Such certificates shall contain substantially the following statement: "The insurance covered by this certificate will not be cancelled or materially altered except after 30 days written notice has been received by the Owner".
30. CONTRACT SECURITY. The Contractor shall furnish a 100 percent performance bond and a 100 percent payment bond as security for the faithful performance of this contract, as security for the payment of all persons performing labor on the project under this contract and furnishing materials in connection with this contract. The performance bond and payment bond shall be in separate instruments. Before the final acceptance, each bond must be approved by the Owner.

31. ASSIGNMENTS. The Contractor shall not assign the whole or any part of this contract or any moneys due or to become due hereunder without written consent of the Owner. In case the Contractor assigns all or any part of any monies due or to become due under this contract, the instrument of assignment shall contain a clause substantially to the effect that it is agreed that the right of the assignee in and to any moneys due or to become due to the Contractor shall be subject to prior claims of all persons, firms and corporations for services rendered or materials supplied for the performance of the work called for in this contract.
32. MUTUAL RESPONSIBILITY OF CONTRACTORS. If, through acts of neglect on the part of the Contractor, any other Contractor or any Subcontractor shall suffer loss or damage on the work, the Contractor agrees to settle with such other Contractor or Subcontractor by agreement or arbitration. If such other Contractor or Subcontractor shall assert any claim against the Owner on account of any damage alleged to have been sustained, the Owner shall notify the Contractor, who shall indemnify and save harmless the Owner against any such claim.
33. SEPARATE CONTRACTS. The contractor shall coordinate his operations with those of other Contractors. Cooperation will be required in the arrangement for the storage of materials and in the detailed execution of the work. The Contractor, including his Subcontractor, shall keep informed of the progress and the detail work of other Contractors and shall notify the Engineer immediately of lack of progress or defective workmanship on the part of the other Contractors. Failure of a Contractor to keep informed of the work progressing on the site and failure to give notice of lack of progress or defective workmanship by others shall be construed as acceptance by him of the status of the work as being satisfactory for proper coordination with his own work.
34. ENGINEER'S AUTHORITY. The Engineer shall determine the amount, quality, acceptability and fitness of the several kinds of work and materials which are to be paid for under this contract and shall decide all questions which may arise in relation to said work and the construction thereof. The Engineer's estimates and decisions shall be final and conclusive, except as herein otherwise expressly provided, in case any question shall arise between the parties hereto relative to said contract or specifications, the determination or decision of the Engineer shall be a condition precedent to the right of the Contractor to receive any money or payment for work under this contract affected in any manner or to any extent by such question.
- 34.1 Interpretation of Drawings and Specifications. The Engineer shall decide the meaning and intent of any portion of the specifications and of any plans or drawings where the same may be found obscure or be in dispute. Any differences or conflicts in regard to their work which may arise between the Contractor under this contract and other Contractors performing work for the Owner shall be adjusted and determined by the Engineer.
35. STATED ALLOWANCES. The Contractor shall include in his proposal the cash allowances stated in the Supplemental General Conditions. The Contractor shall purchase the "Allowed Material" by soliciting not less than three bids as directed by the Owner. If the actual price for purchasing the "Allowed Materials" is more or less than the "Cash Allowance", the contract price shall be adjusted accordingly. The adjustment in contract price shall be made on the basis of the purchase price without additional charges for overhead, profit, insurance or any other incidental expenses. The cost of installation of the "Allowed Materials" shall be included in the applicable sections of the contract specifications covering this work.
36. USE OF PREMISES AND REMOVAL OF DEBRIS. The Contractor expressly undertakes at his own expense:
- (a) To take every precaution against injuries to persons or damage to property.

- (b) To store his apparatus, materials, supplies and equipment in such orderly fashion at the site of the work as will not unduly interfere with the progress of his work or the work of any other contractors.
 - (c) To place upon the work or any part thereof only such loads as are consistent with the safety of that portion of the work.
 - (d) To clean up frequently all refuse, rubbish, scrap materials, and debris caused by his operations, to the end that all times the site of the work shall present a neat, orderly and workmanlike appearance.
 - (e) Before final payment, to remove all surplus material, false work, temporary structures, including foundations thereof, plant of any description and debris of every nature resulting from his operations, and to put the site in a neat, orderly condition.
 - (f) To effect all cutting, fitting or patching of his work required to make the same conform to the plans and specifications, and, except with the consent of the Engineer, not to cut or otherwise alter the work of any other contractor.
37. QUANTITIES OF ESTIMATE. The estimated quantities of work to be done and materials to be furnished under this contract, shown in any of the documents, including the proposal, are given for use in comparing bids, and the right is especially reserved except as herein otherwise specifically limited, to increase or diminish them as may be deemed reasonably necessary or desirable by the Owner to complete the work contemplated by this contract, and such increase or diminution shall in no way vitiate this contract, nor shall any such increase or diminution give cause for claims or liability for damages.
38. RIGHTS-OF-WAY AND SUSPENSION OF WORK. The Owner shall furnish all land and rights-of-way necessary for the carrying out of his contract and the completion of the work herein contemplated, and will use due diligence in acquiring said land and rights-of-way as speedily as possible. But it is possible that all lands and rights-of-way may not be obtained as herein contemplated before construction begins, in which event the Contractor shall begin his work upon such land and rights-of-way as the Owner may have previously acquired, and no claim for damages whatsoever will be allowed by reason of the delay in obtaining the remaining lands and rights-of-way. Should the Owner be prevented or enjoined from proceeding with the work, or from authorizing its prosecution, either before or after the commencement, by reason of any litigation or by reason of its ability to procure any lands or rights-of-way for said work, the Contractor shall not be entitled to make or assert claim for damage by reason of said delay or to withdraw from the contract except by consent of the Owner; but time for completion of the work will be extended to such time as the Owner determines will compensate for the time lost by such delay, such determination to be set forth in writing.
39. GENERAL WARRANTY FOR ONE YEAR AFTER COMPLETION OF CONTRACT. For a period of at least one year after the completion of the contract, the Contractor warrants the fitness and soundness of all work done and materials and equipment put in place under the contract, and neither the final certificate of payment nor any provision in the Contract Documents nor partial or entire occupancy of the premises by the Owner shall constitute an acceptance of work not done in accordance with the Contract Documents or relieve the Contractor of liability in respect to any express warranties or responsibility for faulty materials or workmanship. The Contractor shall remedy any defects in the work and pay for any damage to other work resulting therefrom, which shall appear within a period of one year from the date of final acceptance of the work, unless a longer period is specified. The Owner will give notice of observed defects with reasonable promptness.

40. NOTICE AND SERVICE THEREOF. Any notice to any Contractor from the Owner relative to any part of this contract shall be in writing and considered delivered and the service thereof completed, when said notice is posted by registered mail to said Contractor or his authorized representative on the work, or is deposited in the regular United States Mail in a sealed, postage prepaid envelope and the receipt thereof is acknowledged by the Contractor.
- 40.1 Owner's Notice. All papers required to be delivered to the Owner shall be delivered as indicated in the Supplemental General Conditions.
41. REQUIRED PROVISIONS DEEMED INSERTED. Each and every provision of law and clause required by law to be inserted in this contract shall be deemed to be inserted herein, and the contract shall be read and enforced as though it were included herein, and if through mistake or otherwise any such provision is not inserted or is not correctly inserted, then upon the application of either party the contract shall forthwith be physically amended to make such insertion or correction.
42. PROTECTION OF LIVES AND HEALTH. In order to protect the lives and health of his employees under the contract, the Contractor shall comply with all pertinent provisions of the "Manual of Accident Prevention in Construction" issued by the Associated General Contractors of America, Inc., and shall maintain an accurate record of all cases of death, occupational disease, and injury requiring medical attention or causing loss of time from work, arising out of and in the course of employment on work under the contract. The Contractor alone shall be responsible for the safety, efficiency and adequacy of his plant, appliances and methods, and for any damage which may result from their failure or their improper construction, maintenance or operation.
43. CONFLICTING CONDITIONS. Should any provision in any of the Contract Documents be in conflict or inconsistent with any of the paragraphs in these General Conditions, the more stringent provision shall prevail.
44. FLUORIDE GRANT. The Owner will be seeking a grant for the fluoride feed system. The contractor is responsible for submitting to the Owner a detailed invoice for the cost of providing and installing the fluoride feed system is required to be provided with the partial payment request which includes the fluoride feed system.

END OF SECTION

SUPPLEMENTAL GENERAL CONDITIONS

A. ENUMERATION OF PLANS, SPECIFICATIONS AND ADDENDA

1. The plans, specifications and addenda which form a part of this contract as set forth in Paragraph 1 of the General Conditions, Contract and Contract Documents are enumerated in Section 00005 - Table of Contents and Section 00851 - Drawings Index.

B. CONTRACTOR'S AND SUBCONTRACTOR'S INSURANCE

1. As required under Paragraph 29 of the General Conditions, the CONTRACTOR shall not commence WORK under this Contract until he has obtained all the insurance required under this paragraph and such insurance has been approved by the OWNER, nor shall the CONTRACTOR allow any SUBCONTRACTOR to commence WORK on his Subcontract until all similar insurance required of the SUBCONTRACTOR has been so obtained and approved.
2. Unless otherwise specified in this Contract, the CONTRACTOR shall, at its sole expense, maintain in effect at all times, during the performance of WORK, insurance coverage with limits not less than those set forth below with insurers and under forms of policies satisfactory to OWNER.
3. The CONTRACTOR shall deliver Certificates of Insurance to the ENGINEER no later than ten (10) days after award of the Contract but in any event, prior to execution of the Contract by the OWNER and prior to commencing WORK on the site as evidence that policies providing such coverage and limits of insurance are in full force and effect.
 - a. Certificates shall provide that not less than thirty (30) days advance notice will be given in writing to the OWNER prior to cancellation, termination or material alteration of said policies of insurance.
 - b. Certificates shall identify on their faces the PROJECT NAME and the ENGINEER'S PROJECT NUMBER.
4. Additional Insured: The Commercial General Liability and Excess Liability (Umbrella) insurance policies shall be endorsed to include the OWNER and ENGINEER as additional insured. Such insurance shall be primary and not be contributory with any other insurance maintained by the OWNER or ENGINEER.
5. The OWNER is not maintaining any insurance on behalf of the CONTRACTOR covering against loss or damage to the WORK or to any other property of the CONTRACTOR unless otherwise specifically stated herein and as may be described by appendix hereto. In the event the CONTRACTOR maintains insurance against physical loss or damage to the CONTRACTOR'S construction equipment and tools, such insurance shall include an insurer's waiver of rights of subrogation in favor of OWNER.

6. Indemnification:

- a. CONTRACTOR will indemnify and hold harmless the OWNER, the ENGINEER and their agents and employees from and against all claims, damages, losses and expenses including attorney's fees arising out of or resulting from the performance of the WORK, provided that any such claims, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property including the loss of use resulting therefrom; and is caused in whole or in part by any negligent or willful act of omission of the CONTRACTOR and SUBCONTRACTOR, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable.
- b. In any and all claims against the OWNER or the ENGINEER, or any of their agents or employees, by an employee of the CONTRACTOR, any SUBCONTRACTOR, anyone directly employed by any of them, or anyone for whose acts any of them may be liable, the indemnification obligation shall not be limited in any way by limitation on the amount or type of damages, compensation or benefits payable by or for the CONTRACTOR or any SUBCONTRACTOR under workmen's compensation acts, disability benefit acts or other employee benefits acts.
- c. The obligation of the CONTRACTOR under this paragraph shall not extend to the liability of the ENGINEER, its agents or employees arising out of the preparation or approval of maps, drawings, opinions, reports, surveys, change orders, design or specifications.

7. Insurance Requirements:

- a. **Commercial General Liability Insurance:** The CONTRACTOR shall take out and maintain during the life of the Contract such commercial general liability insurance as shall protect him from claims for damage for bodily injury, including accidental death, as well as from claims for property damage, which may arise from operations under this contract whether such operations are by himself or by any SUBCONTRACTOR or by anyone directly or indirectly employed by either of them. The amount of such insurance shall be not less than the following:

General Aggregate	\$2,000,000.00
Products - Complete/Operations Aggregate	\$2,000,000.00
Personal and Advertising Injury	\$1,000,000.00
Each Occurrence	\$1,000,000.00
Fire Damage (Any one fire)	\$50,000.00
Medical Expenses (Any one person)	\$5,000.00

- 1) The General Aggregate listed above shall be for this project only.
 - 2) **Special Hazards:** The CONTRACTOR'S and his SUBCONTRACTOR'S General Liability Insurance shall provide adequate protection against use of explosives, collapse, and underground hazards. Each detonation of blasting shall be considered a single occurrence.
- b. **Comprehensive Automobile Liability Insurance:**
 - 1) Includes coverage for all owned, hired and non-owned automobiles.

- 2) The combined single limit of liability shall not be less than the following:

Any One Accident or Loss	\$1,000,000.00
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c. **Excess Liability (Umbrella) Insurance:**

- 1) CONTRACTOR shall carry and maintain Combined Excess Liability (Umbrella) insurance for a limit not less than the following:

Each Occurrence	\$2,000,000.00
Aggregate	\$2,000,000.00

d. **Worker's Compensation:** The insurance required by this Section shall be written for not less than the following or greater if required by law:

- 1) Statutory benefits as provided by South Carolina Law.
2) Employers' Liability:

Each Accident	\$500,000.00
Disease - Policy Limit	\$500,000.00
Disease - Each Employee	\$500,000.00

e. **Builders Risk Insurance and Installation Floater Policy:** Where buildings and applicable above-ground structures are included in the Project, CONTRACTOR shall purchase and maintain an "all risk" or special perils form builder's risk policy. Where utilities and underground structures are included in the Project, CONTRACTOR shall purchase and maintain an Installation Floater Policy. Policy shall be issued in the name of the CONTRACTOR, OWNER and all SUBCONTRACTORS for the full contract value of the insurable portions of the WORK. This policy shall contain a provision that in the event of payment of any loss or damage, the insurer will have no rights of recovery against any of the parties named as insureds or additional insureds.

f. **Flood Insurance:** The CONTRACTOR is required to carry flood insurance for projects located in designated flood hazard areas in which Federal Flood Insurance is available.

g. **Earthquake Insurance:** The CONTRACTOR is required to carry earthquake insurance for the full contract value of insurable portions of the WORK.

h. **OWNER'S Protective Liability Insurance:** The CONTRACTOR shall purchase and maintain an OWNER'S Protective Liability policy issued in the name of the OWNER with a combined single limit of liability of not less than the following:

Each Occurrence	\$2,000,000.00
Aggregate	\$2,000,000.00

C. ABBREVIATIONS AND DEFINITIONS

1. Abbreviations used in these Specifications refer to the following:

OWNER: Florence County

ENGINEER: URS Corporation or their duly authorized representative

2. Definitions: Wherever in the specifications or upon the drawings the words "directed", "required", "permitted", "ordered", "designated", "prescribed", or words of like import are used, it shall be understood that the direction, requirement, permission, order, designation or prescription of the OWNER is intended; and similarly, the words "approved", "acceptable", "satisfactory", or words of like import shall mean approved by, or acceptable to, or satisfactory to the OWNER, unless otherwise expressly stated.

D. PHOTOGRAPHS OF PROJECT

1. No photographs of the project will be required.

E. SCHEDULE OF OCCUPATIONAL CLASSIFICATIONS AND MINIMUM HOURLY WAGE RATES

1. The schedule of Occupational Classification and Minimum Hourly Wage Rates applicable to this job are included in these specifications. Any changes will be issued in addendum form prior to the bidding date.

F. NOTICE AND SERVICE THEREOF

1. All papers required to be delivered to the OWNER shall, unless otherwise specified in writing to the CONTRACTOR, be delivered to the OWNER'S representative as indicated below, and any notice to or demand upon the OWNER shall be sufficiently given if delivered to the office of said representative, or if deposited in the United States Mail, in a sealed postage prepaid envelope, or delivered with charges prepaid to any telegraph company for transmission, in each case addressed to the OWNER'S representative as indicated below, or to such other representative of the OWNER, or to such other address as the OWNER may subsequently specify in writing to the CONTRACTOR for such purposes. The OWNER'S representative is as follows:

Patrick D. Fletcher, CPPB
Florence County Procurement Director
Florence County Complex
180 N. Irby Street
Florence, SC 29501

G. CORRELATION OF PLANS AND SPECIFICATIONS

1. The contract, plans and specifications are to be interpreted as mutually explanatory or supplementary, and therefore any features shown in one and not in the other shall have the same force and effect as if shown by both, and shall be fully executed. Prior to execution of the WORK, the CONTRACTOR shall check all drawings and specifications, and shall immediately report to the ENGINEER all errors, discrepancies, conflicts and omissions discovered therein. All such errors, discrepancies, conflicts and omissions will be adjusted by the ENGINEER, and adjustment by the CONTRACTOR without prior approval shall be at his own risk. The settlement of any complications arising from such adjustments shall be made by the CONTRACTOR at his own expense and to the satisfaction of the OWNER.

H. OWNERSHIP OF DRAWINGS

1. All drawings, specifications and memoranda relating to the WORK are the property of the OWNER and are to be carefully used and returned to the OWNER upon completion or cessation of the WORK from any cause.
2. Plans and specifications to be furnished: Five (5) sets of specifications and plans will be furnished to the CONTRACTOR without charge. Additional sets can be secured from the ENGINEER upon request at cost of reproduction. The CONTRACTOR shall have available on the project site at all times one (1) copy of each of said plans and specifications.

I. ORDER OF WORK

1. The prosecution, order or sequence of the WORK shall be as approved by the ENGINEER, which approval, however, shall in no way affect the responsibility of the CONTRACTOR.

J. PHYSICAL DATA

1. The drawings, which accompany and form a part of the contract, have been prepared on the basis of surveys and observations of the site, and are intended to present an essentially accurate indication of the physical conditions at the site. However, this shall not relieve the CONTRACTOR of the necessity for familiarizing himself with physical conditions at the site, and any discrepancies found in the drawings shall not be grounds for claims by the CONTRACTOR against the OWNER, or for non-performance of WORK specifically provided for under the contract.

K. ORGANIZATION, PLANT AND PROGRESS

1. The following is supplemental to Paragraph 16 of the General Conditions:
 - a. The CONTRACTOR shall give his personal superintendence to the WORK, or shall have a competent superintendent with authority to act for him, to the satisfaction of the ENGINEER, on the job at all times during the progress of the WORK.
 - b. The CONTRACTOR shall employ an ample force of properly experienced persons and provide construction plant properly adapted to the WORK and of sufficient capacity and efficiency to accomplish the WORK in a safe and workmanlike manner at a rate of progress satisfactory to the OWNER. All plants shall be maintained in good working order and provision shall be made for immediate emergency repairs. No reduction in the capacity of the plant employed on the WORK shall be made except by written permission of the OWNER. The measure of the capacity of the plant shall be its actual performance on the WORK to which these specifications apply. Award of this contract shall not be construed as a guaranty by the OWNER that plant listed by the CONTRACTOR for use on this contract is adequate for the performance of the WORK.

- c. Should the CONTRACTOR fail to maintain a rate of progress which, in the opinion of the OWNER, will complete WORK within the time limit specified, the OWNER may require that additional persons working, if necessary, during additional periods or shifts, or additional plant, or both, be placed on the WORK; or a reorganization of plant layout be effected in order that the progress of the WORK be brought up to schedule and so maintained. Should the CONTRACTOR refuse or neglect so to increase the number of employees, working period, or plant, or to reorganize the plant layout in the manner satisfactory to the OWNER, the latter may proceed under the provisions of the Contract to rectify the conditions.

L. ENGINEER'S REVIEW AND CONTRACTOR'S INSPECTION

1. The WORK shall be periodically reviewed by the ENGINEER's representatives, but the presence of the ENGINEER's representatives shall not relieve the CONTRACTOR or his responsible agent of responsibility for the proper execution of the WORK.
2. The CONTRACTOR will be required to furnish at his expense such labor, organization and materials which form a part of the ordinary and usual equipment and crew of the CONTRACTOR as may be reasonably necessary in inspecting and supervising the WORK. Should the CONTRACTOR refuse, neglect or delay compliance with this requirement, the specified facilities may be furnished and maintained by the OWNER and the cost thereof will be deducted from any amounts due, or to become due, the CONTRACTOR.
3. Except as specified in this paragraph, or otherwise provided for in these specifications, all expense of inspection will be borne by the CONTRACTOR.
4. It is understood that any instruction or decision given by the ENGINEER through the Resident ENGINEER is to be considered the instruction or decision of the OWNER, in all cases where, under the terms of this contract, decision rests with the ENGINEER.
5. The ENGINEER or his authorized representative shall have access to the WORK at all times.

M. STANDARD TESTS, QUALITY AND GUARANTEES

1. Standard tests, quality and guarantees shall comply with the following:
 - a. All materials, supplies and parts and assemblies thereof, entering into the WORK to be performed under these specifications, shall be tested as specified herein or otherwise required, in conformity with the contract and according to the best modern approved methods for the particular type and class of WORK.
 - b. Unless waived in writing by the ENGINEER, all tests and trials shall be made in the presence of a duly authorized representative of the ENGINEER. When the presence of the inspector is so waived, sworn statements in duplicate of the tests made and results thereof shall be furnished to the ENGINEER by the CONTRACTOR as soon as possible after completion of tests.
 - c. Unless otherwise authorized, directed or specified, where standard published specifications of recognized authorities and organizations are mentioned, the latest revision of such specification current at the time when the WORK is executed shall govern.

- d. All materials and equipment used in the construction of the project shall be subject to adequate inspection and testing in accordance with accepted standards. The laboratory or inspection agency shall be selected by the OWNER. The OWNER will pay for all laboratory inspection service direct and not as a part of the contract.
- e. Materials of construction, particularly those upon which the strength and durability of the structure may depend, shall be subject to inspection and testing to establish conformance with specifications and suitability for uses intended.
- f. In accordance with the Contract, all materials, parts and equipment furnished and incorporated in the WORK shall be high grade, free from defects and imperfections, of recent manufacture and unused. Workmanship shall be of the highest grade and in accordance with the best modern standard practice.

N. STANDARD PRODUCTS

- 1. All materials supplied and articles furnished shall, wherever specified and otherwise wherever practicable, be the standard products of recognized, reputable manufacturers. The standard products of manufacturers other than those specified will be accepted when it is proven to the satisfaction of the ENGINEER, in accordance with the Contract, that they are equal in strength, durability, usefulness and convenience for the purpose intended. Any changes required in the details and dimensions indicated on the drawings, or the substitution of standard products other than those provided for, shall be properly made as approved by the ENGINEER and at the expense of the CONTRACTOR.

O. INTEREST OF CERTAIN FEDERAL AND OTHER OFFICIALS

- 1. No member of or delegate to the Congress of the United States and no Resident Commissioner shall be admitted to any share or part of this Contract or to any benefit to arise from the same. Provided, that the foregoing provision of this Section shall not be construed to extend to this Contract if made with a corporation for its general benefit.
- 2. No member of the governing body of the Local Public Agency who exercises any functions or responsibilities in connection with the carrying out of the Project to which this Contract pertains, and no other officer or employee of the Local Public Agency who exercises any such functions or responsibilities, shall have any private interest, direct or indirect, in this Contract which is incompatible or in conflict with the discharge or fulfillment of his functions and responsibilities in connection with the carrying out of the project to which this Contract pertains.

END OF SECTION

FOLLOWING ARE TWO 00800 SECTIONS.

WHERE A CONFLICT EXISTS BETWEEN THE TWO,
THE MORE STRINGENT REQUIREMENT OR STATEMENT SHALL APPLY.

**DEPARTMENT OF COMMERCE
GRANTS ADMINISTRATION
COMMUNITY DEVELOPMENT BLOCK GRANT PROGRAM**



CONTRACT SPECIAL PROVISIONS

The following CDBG Contract Special Provisions should be used with all construction contracts, including housing rehabilitation, as applicable, and professional service contracts, where CDBG funds are being used in whole or in part.

CONTRACT SPECIAL PROVISIONS

1. **Definitions:** For purposes of this Contract, the following terms shall have the meanings set forth below:
 - (a) **"Assistance"** means the CDBG grant funds provided, or to be provided, to the Grantee by the State, pursuant to the Grant Award Agreement.
 - (b) **"CDBG"** means Community Development Block Grant.
 - (c) **"Contract"** means the contractual agreement between the Owner and the Contractor to which these Contract Special Provisions have been incorporated and made a part thereof.
 - (d) **"Contractor"** means the contractor whose services are retained pursuant to the Contract.
 - (e) **"Grantee"** means the unit of local government designated as the recipient of the Assistance in the Grant Award and signing the acceptance provision of the Grant Award.
 - (f) **"HUD"** means U.S. Department of Housing and Urban Development, which is the federal agency that awards and has authority over CDBG funding to the State.
 - (g) **"Owner"** means the Grantee or Subrecipient, as applicable.
 - (h) **"Project"** means the project for which the services of the Contractor have been retained pursuant to the Contract which are funded, in whole or in part, with CDBG funds.
 - (i) **"State"** means the State of South Carolina, or that agency, agency division, or Office of State government which has been delegated the responsibility for administering the CDBG program for the State of South Carolina, as appropriate.
 - (j) **"Subrecipient"** means the agent of the unit of local government as designated by an agreement.
 - (k) **"Labor Surplus Area"** means a civil jurisdiction that has an unemployment rate at least 20% above the average unemployment rate for all states, the District of Columbia, and Puerto Rico during the previous two calendar years. The Department of Labor issues the labor surplus area list on a fiscal year basis.

2. **Prime Contractor Responsibilities:** The Contractor is required to assume sole responsibility for the complete effort and enforcement of laws and regulations under this Contract. The Owner will consider the Contractor to be the sole point of contact with regard to contractual matters.
3. **Federal and State Laws:** The Contractor agrees to comply with all CDBG requirements as well as other federal and state laws, regulations, or Executive Orders. The State reserves the right to add or delete terms and conditions of this Contract as may be required by revisions and additions or changes in the requirements, regulations, and laws governing the CDBG Program.
4. **Procurement and Contracting:** In accordance with 24 CFR Part 85.36 (f), the cost plus a percentage of cost and percentage of construction cost methods of contracting shall not be used. This provision shall supersede any conflicting provision in an executed contract document or agreement funded in whole or in part with CDBG funds.
5. **Ownership:** Ownership of all real or personal property, acquired in whole or in part with CDBG funds for use on this Project, shall be vested in the Grantee, unless otherwise authorized by the State. When the Grantee determines that the property is no longer required for the purposes of this Project, the Grantee must notify the State and obtain approval for disposition of the property in accordance with applicable guidelines.
6. **Copyright:** Except as otherwise provided in the terms and conditions of this Contract, the Contractor paid through this Contract is free to copyright any books, publications or other copyrightable materials developed in the course of the Project and under this Contract. However, HUD and the State reserve a royalty-free, non-exclusive and irrevocable license to reproduce, publish or otherwise use and to authorize others to use, for Federal government and State purposes:
 - (a) the copyright in any work developed under this Contract; and
 - (b) any rights of copyright to which a subcontractor purchases ownership with grant support.

The Federal government's rights and the State's rights identified above must be conveyed to the publisher and the language of the publisher's release form must insure the preservation of these rights.
6. **Reporting Requirements:** The Contractor agrees to complete and submit all reports, in such form and according to such schedule, as may be required by the State or HUD. Further, the Contractor agrees to require any subcontractors to submit reports that may be required and to incorporate such language in its agreements. Failure to meet deadlines with the required information could result in sanctions.
7. **Access to Records:** All records with respect to all matters covered by this Contract shall be made available at any time for audit and inspection by HUD, the State or the Grantee or their representatives upon their request.
8. **Maintenance of Records:** Records for non-expendable property purchased totally or partially with Federal funds must be retained for five years after final close-out of the grant. All other pertinent contract records including financial records, supporting documents and statistical records shall be retained for a minimum of five years after the final close-out

report. However, if any litigation, claim, or audit is started before the expiration of the five year period, then records must be retained for five years after the litigation, claim or audit is resolved.

9. **Confidential Information:** Any reports, information, data, etc., given to, prepared by, or assembled by the Contractor under this Contract, which the Grantee or the State requests to be kept confidential, shall not be made available to any individual or organization by the Contractor without prior written approval of the Grantee or the State, as applicable.
10. **Reporting of Fraudulent Activity:** If at any time during the term of this Contract anyone has reason to believe by whatever means that, under this or any other program administered by the State, a recipient of funds has improperly or fraudulently applied for or received benefits, monies or services pursuant to this Contract or any other contract, such information shall be reported immediately to the appropriate authorities.
11. **Political Activity:** None of the funds, materials, property or services provided directly or indirectly under this Contract shall be used for any partisan political activity, or to further the election or defeat of any candidate for public office or otherwise in violation of the provisions of Section 8-13-765 of the Code of Laws of South Carolina, 1976, as amended.
12. **Conflicts of Interest and Ethical Standards, South Carolina Consolidated Procurement Code:** The following provisions regarding "conflicts of interest" apply to the use and expenditure of CDBG funds by the Grantee and its subrecipients, including the Contractor.

In the procurement of supplies, equipment, construction and services, the more restrictive conflict of interest provisions of the State of South Carolina Ethics, Government Accountability and Campaign Reform Act of 1991 or of the Contractor shall apply.

In cases not governed by the above, such as the acquisition and disposition of real property and the provision of CDBG assistance to individuals, businesses and other private entities, the following provisions shall apply.

Except for eligible administrative or personnel costs, the general rule is that no person who is an employee, agent, consultant, officer, or elected or appointed official of the State or a unit of general local government or any designated public agencies or subrecipient which are receiving CDBG funds who exercise or have exercised any function or responsibilities with respect to CDBG activities assisted herein or are in a position to participate in a decision making process or gain inside information with regard to such activities, may obtain a financial interest or benefit from the activity, or have an interest in any contract, subcontract or agreement with respect thereto, or the proceeds thereunder either for themselves or those with whom they have family or business ties during their tenure or for one year thereafter. Exceptions may be granted by the State on a case by case basis as requested upon full disclosure in writing.

Should any governmental entity, contractor, subcontractor, employee or official know or perceive any breach of ethical standards or conflict of interest under the CDBG grant awarded to the Grantee or any other CDBG grant, they shall immediately notify in writing the Department of Commerce, Grants Administration, 1201 Main Street, Suite 1600, Columbia, South Carolina, 29201. If the State finds any circumstances that may give rise to

a breach of ethical standards or conflict of interest, under any grant, they shall notify the participating governmental entity and the State Ethics Commission as appropriate. The State may undertake any administrative remedies it deems appropriate, where there is a breach of ethical standards or conflict of interest under the regulations governing the CDBG Program and the State policies.

13. **Applicable Law:** In addition to the applicable Federal laws and regulations, this Contract is also made under and shall be construed in accordance with the laws of the State. By execution of this Contract, the Contractor agrees to submit to the jurisdiction of the State for all matters arising or to arise hereunder, including but not limited to performance of said Contract and payment of all licenses and taxes of whatever kind or nature applicable hereto.
14. **Limitation of Liability:** The Contractor will not assert in any legal action by claim or defense, or take the position in any administrative or legal procedures that he is an agent or employee of the Owner. This provision is not applicable to contracts for CDBG administration services where the Contractor is a Council of Government. The State shall not be liable for failure on the part of the Grantee or any other party to perform all work in accordance with all applicable laws and regulations. The Grantee agrees to defend, indemnify, and hold harmless the State from and against all claims, demands, judgments, damages, actions, causes of actions, injuries, administrative orders, consent agreement and orders, liabilities, penalties, costs, and expenses of any kind whatsoever, including, without limitation, claims arising out of loss of life, injury to persons, property, or business or damage to natural resources in connection with the activities of the Grantee and any other third parties in a contractual relationship with the Grantee, or a subsidiary, whether or not occasioned wholly or in part by any condition, accident, or event caused by any act or omission of the State as a result of the Assistance.
15. **Legal Services:** No attorney-at-law shall be engaged through the use of any funds provided under this Contract in any legal action or proceeding against the State, the Grantee, any local public body or any political subdivision.
16. **Contract:** If any provision in this Contract shall be held to be invalid or unenforceable, the remaining portions shall remain in effect. In the event such invalid or unenforceable provision is considered an essential element of this Contract, the parties shall promptly negotiate a replacement provision, which addresses the intent of such provision.
17. **Amendments:** Any changes to this Contract affecting the scope of work of the Project must be approved, in writing, by the Owner and the Contractor and shall be incorporated in writing into this Contract. Any amendments exceeding 10% or \$10,000 (whichever is less) of the original contract price must have written approval by the State prior to execution.
18. **Termination for Convenience:** This Contract may be terminated for convenience in accordance with 24 CFR Part 85.44.
19. **Sanctions:** If the Contractor fails or refuses to comply with the provisions set forth herein, the State or Owner may take any or all of the following actions: cancel, terminate or suspend in whole or in any part the contract, or refrain from extending any further funds to the Contractor until such time as the Contractor is in full compliance.
20. **Subcontracting:** If any part of the work covered by this Contract is to be subcontracted, the Contractor shall identify the subcontracting organization and the contractual arrangements

made therewith to the Owner and to the State. All subcontracts must be approved by the Owner and the State to insure they are not debarred or suspended by the Federal or State governments and to insure the Owner and the State understand the arrangements.

21. Subcontracting with Small and Minority Firms, Women's Business Enterprise and Labor Surplus Areas:

It is national policy to award a fair share of contracts to disadvantaged business enterprises (DBEs), small business enterprises (SBEs), minority business enterprises (MBEs) and women's business enterprises (WBEs). Accordingly, affirmative steps must be taken to assure that DBEs, SBEs, MBEs and WBEs are utilized when possible as sources of supplies, equipment, construction and services. Affirmative steps shall include the following:

- (a) Including qualified DBEs, SBEs, MBEs and WBEs on solicitation lists;
- (b) Assuring that DBEs, SBEs, MBEs and WBEs are solicited whenever they are potential sources;
- (c) Whenever economically feasible, dividing total requirements into smaller tasks or quantities so as to permit maximum participation by DBEs, SBEs, MBEs and WBEs;
- (d) Where the requirement permits, establishing delivery schedules which will encourage participation by DBEs, SBEs, MBEs and WBEs;
- (e) Using the services and assistance of the Small Business Administration, Minority Business Development Agency, the State Office of Small and Minority Business Assistance, the U.S. Department of Commerce and the Community Services Administration as required; and
- (f) Requiring the subcontractor, if any, to take the affirmative actions outlined in (1) – (5) above.

22. Debarment Certification: The Contractor must comply with Executive Order 11246 regarding Federal debarment and suspension regulations prior to entering into a financial agreement for any transaction as outlined below.

- (a) Any procurement contract for goods and services, regardless of type, expected to equal or exceed the Federal procurement small purchase threshold (which is \$100,000 and is cumulative amount from all federal funding sources).
- (b) Any procurement contract for goods and services, regardless of amount, under which the Contractor will have a critical influence on or substantive control over the transaction.

In addition, no contract may be awarded to any contractors who are ineligible to receive contracts under any applicable regulations of the State.

23. South Carolina Illegal Immigration Reform Act: The Owner and the Contractor are required to comply with the South Carolina Illegal Immigration Reform Act (signed June 4, 2008) requiring verification of lawful presence in the United States of any alien eighteen years of age or older who has applied for state or local public benefits, as defined in 8 U.S.C. Section 1621, or for federal public benefits, as defined in U.S.C. Section 1611.

24. Equal Employment Opportunity: The Contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the State.

In carrying out the Project, the Contractor shall not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The Contractor must take affirmative action to insure that applicants for employment are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, or national origin. Such action shall include, but not be limited to, the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor shall post in conspicuous places, available to employees and applicants for employment, notices to be provided by the State setting forth the provisions of this non-discrimination clause. The Contractor shall state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, or national origin. The Contractor will, in all solicitations or advertisements for employees by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, or national origin. The Contractor shall incorporate the foregoing requirements of this paragraph in all of its subcontracts for the Project unless exempted by rules, regulations, or orders of the State issued pursuant to section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor.

The Contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided by the State advising the said labor union or workers' representatives of the Contractor's commitment under this Section and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

The Contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by the rules, regulations, and orders of the State, or pursuant thereto, and will permit access to its books, records, and accounts by HUD and the State for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

In the event of the Contractor's noncompliance with the non-discrimination clauses of this Contract or with any of such rules, regulations, or orders, this Contract may be canceled, terminated or suspended in whole or in part and the Contractor may be declared ineligible for further State government contracts or federally assisted construction contract procedures authorized in Executive Order 11246 of September 24, 1965, or by rules, regulations, or orders of the State, or as otherwise provided by law.

25. **Age Discrimination:** In accordance with 45 CFR, Parts 90 and 91, the Contractor agrees there shall be no bias or age discrimination as to benefits and participation under this Contract.
26. **Section 109 of the Housing and Community Development Act of 1974:** No person in the United States shall on the grounds of race, color, national origin or sex be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity funded in whole or in part with funds made available under the CDBG program of the State.
27. **Section 504 of the Rehabilitation Act of 1973, as amended:** The Contractor agrees that no otherwise qualified individual with disabilities shall, solely by reason of his disability, be

denied the benefits, or be subjected to discrimination including discrimination in employment, any program or activity that receives the benefits from the Assistance.

28. **Section 3, Compliance and Provision of Training, Employment and Business Opportunities:** The work to be performed under this Contract is subject to the requirements of Section 3 of the Housing and Urban Development Act of 1968, as amended, (12 USC § 1701u). The purpose of Section 3 is to ensure that employment and other economic opportunities generated by HUD assistance or HUD-assisted projects covered by Section 3 shall, to the greatest extent feasible be directed to low and very low-income persons, particularly persons who are recipients of HUD assistance for housing.

The parties to this said Contract agree to comply with HUD's regulations in 24 CFR Part 135, which implement Section 3. As evidenced by their execution of this Contract, the parties to this Contract certify that they are under no contractual or other impediment that would prevent them from complying with the 24 CFR Part 135 regulations.

The contractor agrees to send to each labor organization or representative of workers with which the Contractor has a collective bargaining agreement or other understanding, if any, a notice advising the organization or workers' representative of the contractor's commitments under this Section 3 clause, and will post copies of the notice in conspicuous places at the work site where both employees and applicants for training and employment positions can see the notice. The notice shall describe the Section 3 preference, shall set forth minimum number and job titles subject to hire, availability of apprenticeship and training positions; the qualifications for each; and the name and location of person(s) taking applications for each of the positions; and the anticipated date the work shall begin. The Contractor agrees to include this Section 3 clause in every subcontract subject to compliance with regulations in 24 CFR Part 135, and agrees to take appropriate action, as provided in an applicable provision of the subcontract or in this Section 3 clause, upon a finding that the subcontractor is in violation of the regulations in 24 CFR Part 135. The Contractor will not subcontract with any subcontractor where the Contractor has notice or knowledge that the subcontractor has been found in violation of the regulations in 24 CFR Part 135.

The Contractor will certify that any vacant employment positions including training positions, that are filled (1) after the Contractor is selected but before this Contract has been executed, and (2) with persons other than those to whom the regulations of 24 CFR Part 135 require employment opportunities to be directed, were not filled to circumvent the Contractor's obligations under 24 CFR Part 135.

The Contractor agrees to submit such reports as required to document compliance with 24 CFR Part 135. Noncompliance with the regulations in 24 CFR Part 135 may result in sanctions, termination of this Contract for default, and debarment or suspension from future HUD assisted contracts.

29. **Lead-Based Paint:** The construction or rehabilitation of residential structures with any portion of the Assistance is subject to the HUD Lead-Based Paint regulations found at 24 CFR Part 35. Any grants or loans made by the Grantee for the rehabilitation of residential structures with any portion of the Assistance shall be made subject to the provisions for the elimination of lead-base paint hazards under subpart B of said regulations, and the Grantee shall be responsible for the inspections and certifications required under Section 35.14(f) thereof.

30. Compliance with Air and Water Acts: (Applicable to construction contracts and related subcontracts exceeding \$100,000) This Contract is subject to the requirements of the Clean Air Act, as amended, 42 USC § 7401 et seq., the Federal Water Pollution Control Act (Clean Water Act), as amended, 33 USC § 1251 et seq., and the regulations of the Environmental Protection Agency with respect to 40 CFR Part 15, as amended from time to time, and the South Carolina Stormwater Management and Sediment Reduction Act. In particular, the following are required:

- (a) A stipulation by the Contractor or subcontractor that any facility to be utilized in the performance of any nonexempt contract or subcontract is not listed on the List of Violating Facilities, issued by the Environmental Protection Agency (EPA) pursuant to 40 CFR § 15.20.
- (b) Agreement by the Contractor to comply with all the requirements of Section 114 of the Clean Air Act, as amended (42 USC § 7414) and Section 308 of the Federal Water Pollution Control Act, as amended (33 USC § 1318) relating to inspection, monitoring, entry, reports and information, as well as all other requirements specified in said Sections 114 and 308, and all regulations and guidelines issued thereunder.
- (c) A stipulation that as a condition of award of contract prompt notice will be given of any notification received from the Director, Office of Federal Activities, EPA, indicating that a facility utilized or to be utilized for the contract under consideration is to be listed on the EPA list of Violating Facilities.
- (d) Agreement by the Contractor that the Contractor will include or cause to be included the criteria and requirements in these subparagraphs (1) through (4), in every nonexempt subcontract and requiring that the Contractor will take such action as the State may direct as a means of enforcing such provisions.

In no event shall any amount of the Assistance be utilized with respect to a facility which has given rise to a conviction under section 113(c)(1) of the Clean Air Act or Section 309(c) of the Federal Water Pollution Control Act.

31. Federal Labor Standards Provisions: (*Applicable to construction contracts in excess of \$2,000 or residential rehabilitation contracts involving more than eight units*)

The Project or program to which the construction work covered by this Contract pertains is being assisted by the United States of America and the Federal Labor Standards Provisions as set forth on Attachment 1 are included in this Contract pursuant to the provisions applicable to such Federal assistance. These provisions must be complied with or sanctions will be instituted.

Attachment 1

U.S. Department of Housing and Urban Development, Office of Labor Relations form HUD-4010 (07/2003) ref. Handbook 1344.1

A. 1. (i) Minimum Wages. All laborers and mechanics employed or working upon the site of the work will be paid unconditionally and not less often once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR Part 3), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached thereto and made a part thereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics. Contributions made or costs reasonably anticipated for bona fide fringe benefits under Section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of 29 CFR 5.5 (a)(1)(iv); also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs, which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period.

Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification of the time actually work therein: Provided, That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification an wage rates conformed under 29 CFR 5.5(a)(1)(ii) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible, place where it can be easily seen by the workers.

(ii) (a) Any class of laborers or mechanics which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. HUD shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

- (1)** The work to be performed by the classification requested is not performed by a classification in the wage determination; and
- (2)** The classification is utilized in the area by the construction industry; and
- (3)** The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(b) If the contractor and the laborers and mechanics to be employed I the classification (if known), or their representatives, and HUD or its designee agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by HUD or its designee to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, D.C. 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so

advise HUD or its designee within the 30-day period that additional time is necessary. (Approved by the Office of Management and Budget under OMB Control Number 1215-0140.)

(c) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and HUD or its designee do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), HUD or its designee shall refer the questions, including the views of all interested parties and the recommendation of HUD or its designee, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise HUD or its designee or will notify HUD or its designee within the 30-day period that additional time is necessary. (Approved by the Office of Management and Budget under OMB Control Number 1214-0140.)

(d) The wage rate (including fringe benefits where appropriate) determined pursuant to subparagraphs (1)(ii)(b) or (c) of this paragraph, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

(iii) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

(iv) If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the Contractor to set aside in a separate account assets for the meeting of obligations under the plan or program. (Approved by the Office of Management and Budget under OMB Control Number 1215-0140.)

2. Withholding. HUD or its designee shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld from the contractor under this contract or any other Federal contract with the same prime contractor, or any other Federal-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice trainee or helper, employed or working on the site of the work, all or part of the wages required by the contract, HUD or its designee may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension or any further payment, advance, or guarantee of funds until such violations have ceased. HUD or its designee may, after written notice to the contractor, disburse such amounts withheld for an on account of the contractor or subcontractor to the respective employees to whom they are due. The Comptroller General shall make such disbursements in the case of direct Davis-Bacon Act contracts.

3. (i) Payrolls and basic records. Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work preserved for a period of three

years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in Section 1 (b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5 (a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in Section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment of provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices and trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs. (Approved by the Office of Management and Budget under OMB Control Numbers 1215-0140 and 1215-0017.)

(ii) (a) the contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to HUD or its designee if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit the payrolls to the applicant sponsor, or owner, as the case may be, for transmission to HUD or its designee. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i). This information may be submitted in any form desired. Optional Form WH-347 is available for this purpose and may be purchased from the Superintendent of Documents (Federal Stock Number 029-005-00014-1), U.S. Government Printing Office, Washington, DC 20402. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. (Approved by the Office of Management and Budget Under OMB Control Number 1215-0129.)

(b) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays for supervises the payment of the persons employed under the contract and shall certify the following:

(1) That the payroll for the payroll period contains the information required to be maintained under 29 CFR 5.5 (a)(3)(i) and that such information is correct and complete'

(2) That each laborer or mechanic (including each apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in 29 CFR Part 3;

(3) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(c) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by subparagraph A.3.(ii)(b).

(d) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under Section 1001 of Title 18 and Section 231 of Title 31 of the United States Code.

(iii) The contractor or subcontractor shall make the records required under subparagraph A.3.(i) available for inspection, copying, or transcription by authorized representatives of HUD or its designee or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, HUD or its designee may, after written notice to the contractor, sponsor, applicant or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

4. Apprentices and Trainees.

(i) **Apprentices.** Apprentices will be permitted to work at less than the predetermined rate for the work they perform when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment Training Administration, Office of Apprenticeship Training, Employer and Training Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen in any craft classification shall not be greater than the ratio permitted to the contractor as to his entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as state above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ration permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved

(ii) **Trainees.** Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every Trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(iii) **Equal employment opportunity.** The utilization of apprentices, trainees and journeymen under 29 CFR Part 5 shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR Part 30.

5. Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR Part 3 which are incorporated by reference in this contract.

6. Subcontracts. The contractor or subcontractor will insert in any subcontracts the clauses contained in subparagraphs 1 through 11 of this paragraph A and such other clauses as HUD or its designee may by appropriate instructions require, and a copy of the applicable prevailing wage decision, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in this paragraph.

7. Contract termination; debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

8. Compliance with Davis-Bacon and Related Act Requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR Parts 1, 3, and 5 are herein incorporated by reference in this contract.

9. Disputes concerning labor standards. Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR Parts 5, 6, and 7. Disputes within the meaning of this clause

include disputes between the contractor (or any of its subcontractors) and HUD or its designee, the U.S. Department of Labor, or the employees or their representatives.

10. (i) Certification of Eligibility. By entering into this contract the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of Section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1) or to be awarded HUD contracts or participate in HUD programs pursuant to 24 CFR Part 24.

(ii) No part of this contract shall be subcontracted to any person or firm ineligible for award of a government contract by virtue of Section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1) or to be awarded HUD contracts or participate in HUD programs pursuant to 24 CFR Part 24.

(iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001. Additionally, U.S. Criminal Code, Section 1010, Title 18, U.S.C., "Federal Housing Administration transactions", provided in part: "Whoever, for the purpose of . . . influencing in any way the action of such Administration . . . makes, utters or publishes any statement knowing the same to be false . . . shall be fined not more than \$5,000 or imprisoned not more than two years, or both."

11. Complaints, Proceedings, or Testimony by Employees. No laborer or mechanic to whom the wage, salary, or other labor standards provisions of this Contract are applicable shall be discharged or in any other manner discriminated against by the Contractor or any subcontractor because such employee has filed any complaint or instituted or caused to be instituted any proceeding or has testified or is about to testify in any proceeding under or relating to the labor standards applicable under this Contract to his employer.

B. Contract Work Hours and Safety Standards Act. The provisions of this paragraph B are applicable only where the amount of the prime contract exceeds \$100,000. As used in this paragraph, the terms "laborers" and "mechanics" include watchmen and guards.

(1) Overtime Requirements. No Contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of 40 hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of 40 hours in such workweek.

(2) Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in subparagraph (1) of this paragraph, the contractor and any subcontractor responsible therefore shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violations of the clause set forth in subparagraph (1) of this paragraph, in the sum of \$10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of 40 hours without payment of the overtime wages required by the clause set forth in subparagraph (1) of this paragraph.

(3) Withholding for unpaid wages and liquidated damages. HUD or its designee shall upon its own action or upon written request of an authorized representative of the

Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract, or any other Federal contract with the same prime contract, or any other Federally-assisted contract subject to the Contract Work Hours and Safety Standards Act which is held by the same prime contractor such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in subparagraph (2) of this paragraph.

(4) **Subcontracts.** The contractor or subcontractor shall insert in any subcontracts the clauses set forth in subparagraph (1) through (4) of this paragraph and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime Contractor or lower tier subcontractor with the clauses set forth in subparagraphs (1) through (4) of this paragraph.

C. Health and Safety. The provisions of this paragraph C are applicable only where the amount of the prime contract exceeds \$100,000.

(1) No laborer or mechanic shall be required to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous to this health and safety as determined under construction safety and health standards promulgated by the Secretary of Labor by regulation.

(2) The Contractor shall comply with all regulations issued by the Secretary of Labor pursuant to Title 29 Part 1926 and failure to comply may result in imposition of sanctions pursuant to the Contract Work Hours and Safety Standards Act, 40 USC 3701 et. seq.

(3) The Contractor shall include the provisions of this paragraph in every subcontract so that such provisions will be binding on each subcontractor. The Contractor shall take such action with respect to any subcontract as the Secretary of Housing and Urban Development or the Secretary of Labor shall direct as a means of enforcing such provisions.

SECTION 00830

SCHEDULE OF OCCUPATIONAL CLASSIFICATIONS AND
MINIMUM HOURLY WAGE RATES

General Decision Number: SC140054 03/07/2014 SC54

Superseded General Decision Number: SC20130054

State: South Carolina

Construction Type: Heavy

Counties: Aiken, Florence and Sumter Counties in South Carolina.

Aiken County (Excludes Savannah River Site)

HEAVY CONSTRUCTION PROJECTS

Modification Number	Publication Date
0	01/03/2014
1	03/07/2014

IRON0848-001 02/01/2012

	Rates	Fringes
IRONWORKER, STRUCTURAL.....	\$ 21.55	8.90

SUSC2011-045 11/02/2011

	Rates	Fringes
CARPENTER, Includes Form Work....	\$ 14.85	0.00
LABORER: Common or General.....	\$ 10.69	0.00
LABORER: Pipelayer.....	\$ 12.84	0.00
OPERATOR: Backhoe/Excavator/Trackhoe.....	\$ 12.50	0.00
OPERATOR: Grader/Blade.....	\$ 20.11	1.39
OPERATOR: Loader.....	\$ 10.50	1.98
TRUCK DRIVER.....	\$ 14.15	2.32

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of "identifiers" that indicate whether the particular rate is union or non-union.

Union Identifiers

An identifier enclosed in dotted lines beginning with characters other than "SU" denotes that the union classification and rate have found to be prevailing for that classification. Example: PLUM0198-005 07/01/2011. The first four letters, PLUM, indicate the international union and the four-digit number, 0198, that follows indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. The date, 07/01/2011, following these characters is the effective date of the most current negotiated rate/collective bargaining agreement which would be July 1, 2011 in the above example.

Union prevailing wage rates will be updated to reflect any changes in the collective bargaining agreements governing the rates.

0000/9999: weighted union wage rates will be published annually each January.

Non-Union Identifiers

Classifications listed under an "SU" identifier were derived from survey data by computing average rates and are not union rates; however, the data used in computing these rates may include both union and non-union data. Example: SULA2004-007 5/13/2010. SU indicates the rates are not union majority rates, LA indicates the State of Louisiana; 2004 is the year of the survey; and 007 is an internal number used in producing the wage determination. A 1993 or later date, 5/13/2010, indicates the classifications and rates under that identifier were issued as a General Wage Determination on that date.

Survey wage rates will remain in effect and will not change until a new survey is conducted.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- * an existing published wage determination
- * a survey underlying a wage determination
- * a Wage and Hour Division letter setting forth a position on

- a wage determination matter
- * a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION

Federal Labor Standards Provisions

U.S. Department of Housing
and Urban Development
Office of Labor Relations

Applicability

The Project or Program to which the construction work covered by this contract pertains is being assisted by the United States of America and the following Federal Labor Standards Provisions are included in this Contract pursuant to the provisions applicable to such Federal assistance.

A. 1. (i) Minimum Wages. All laborers and mechanics employed or working upon the site of the work will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR Part 3), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics. Contributions made or costs reasonably anticipated for bona fide fringe benefits under Section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of 29 CFR 5.5(a)(1)(iv); also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs, which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period.

Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided, That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under 29 CFR 5.5(a)(1)(ii) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible, place where it can be easily seen by the workers.

(ii) (a) Any class of laborers or mechanics which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. HUD shall approve an additional classification and wage rate and fringe benefits therefor only when the following criteria have been met:

- (1)** The work to be performed by the classification requested is not performed by a classification in the wage determination; and
 - (2)** The classification is utilized in the area by the construction industry; and
 - (3)** The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.
- (b)** If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and HUD or its designee agree on the classification and wage rate (including the amount designated for fringe benefits where

appropriate), a report of the action taken shall be sent by HUD or its designee to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, D.C. 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise HUD or its designee or will notify HUD or its designee within the 30-day period that additional time is necessary. (Approved by the Office of Management and Budget under OMB control number 1215-0140.)

(c) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and HUD or its designee do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), HUD or its designee shall refer the questions, including the views of all interested parties and the recommendation of HUD or its designee, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise HUD or its designee or will notify HUD or its designee within the 30-day period that additional time is necessary. (Approved by the Office of Management and Budget under OMB Control Number 1215-0140.)

(d) The wage rate (including fringe benefits where appropriate) determined pursuant to subparagraphs (1)(ii)(b) or (c) of this paragraph, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

(iii) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

(iv) If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program. (Approved by the Office of Management and Budget under OMB Control Number 1215-0140.)

2. Withholding. HUD or its designee shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld from the contractor under this contract or any other Federal contract with the same prime contractor, or any other Federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee or helper, employed or working on the site of the work, all or part

of the wages required by the contract, HUD or its designee may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased. HUD or its designee may, after written notice to the contractor, disburse such amounts withheld for and on account of the contractor or subcontractor to the respective employees to whom they are due. The Comptroller General shall make such disbursements in the case of direct Davis-Bacon Act contracts.

3. (i) Payrolls and basic records. Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in Section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5 (a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in Section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs. (Approved by the Office of Management and Budget under OMB Control Numbers 1215-0140 and 1215-0017.)

(ii) (a) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to HUD or its designee if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit the payrolls to the applicant sponsor, or owner, as the case may be, for transmission to HUD or its designee. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i). This information may be submitted in any form desired. Optional Form WH-347 is available for this purpose and may be purchased from the Superintendent of Documents (Federal Stock Number 029-005-00014-1), U.S. Government Printing Office, Washington, DC 20402. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. (Approved by the Office of Management and Budget under OMB Control Number 1215-0149.)

(b) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(1) That the payroll for the payroll period contains the information required to be maintained under 29 CFR 5.5 (a)(3)(i) and that such information is correct and complete;

(2) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll

period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in 29 CFR Part 3;

(3) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(c) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by subparagraph A.3.(ii)(b).

(d) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under Section 1001 of Title 18 and Section 231 of Title 31 of the United States Code.

(iii) The contractor or subcontractor shall make the records required under subparagraph A.3.(i) available for inspection, copying, or transcription by authorized representatives of HUD or its designee or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, HUD or its designee may, after written notice to the contractor, sponsor, applicant or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

4. Apprentices and Trainees.

(i) **Apprentices.** Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the

journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(II) **Trainees.** Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(III) **Equal employment opportunity.** The utilization of apprentices, trainees and journeymen under 29 CFR Part 5 shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR Part 30.

5. Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR Part 3 which are incorporated by reference in this contract

6. Subcontracts. The contractor or subcontractor will insert in any subcontracts the clauses contained in subparagraphs 1 through 11 of this paragraph A and such other clauses as HUD or its designee may by appropriate instructions require, and a copy of the applicable prevailing wage decision, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in this paragraph.

7. Contract termination; debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

8. Compliance with Davis-Bacon and Related Act Requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR Parts 1, 3, and 5 are herein incorporated by reference in this contract

9. Disputes concerning labor standards. Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR Parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and HUD or its designee, the U.S. Department of Labor, or the employees or their representatives.

10. (i) Certification of Eligibility. By entering into this contract the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of Section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1) or to be awarded HUD contracts or participate in HUD programs pursuant to 24 CFR Part 24.

(II) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of Section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1) or to be awarded HUD contracts or participate in HUD programs pursuant to 24 CFR Part 24.

(III) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001. Additionally, U.S. Criminal Code, Section 1 01 0, Title 18, U.S.C., "Federal Housing Administration transactions", provides in part: "Whoever, for the purpose of . . . influencing in any way the action of such Administration..... makes, utters or publishes any statement knowing the same to be false..... shall be fined not more than \$5,000 or imprisoned not more than two years, or both."

11. Complaints, Proceedings, or Testimony by Employees. No laborer or mechanic to whom the wage, salary, or other labor standards provisions of this Contract are applicable shall be discharged or in any other manner discriminated against by the Contractor or any subcontractor because such employee has filed any complaint or instituted or caused to be instituted any proceeding or has testified or is about to testify in any proceeding under or relating to the labor standards applicable under this Contract to his employer.

B. Contract Work Hours and Safety Standards Act. The provisions of this paragraph B are applicable only where the amount of the prime contract exceeds \$100,000. As used in this paragraph, the terms "laborers" and "mechanics" include watchmen and guards.

(1) Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of 40 hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of 40 hours in such workweek.

(2) Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in subparagraph

graph (1) of this paragraph, the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in subparagraph (1) of this paragraph, in the sum of \$10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of 40 hours without payment of the overtime wages required by the clause set forth in sub paragraph (1) of this paragraph.

(3) Withholding for unpaid wages and liquidated damages. HUD or its designee shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contract, or any other Federally-assisted contract subject to the Contract Work Hours and Safety Standards Act which is held by the same prime contractor such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in subparagraph (2) of this paragraph.

(4) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in subparagraph (1) through (4) of this paragraph and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in subparagraphs (1) through (4) of this paragraph.

C. Health and Safety. The provisions of this paragraph C are applicable only where the amount of the prime contract exceeds \$100,000.

(1) No laborer or mechanic shall be required to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous to his health and safety as determined under construction safety and health standards promulgated by the Secretary of Labor by regulation.

(2) The Contractor shall comply with all regulations issued by the Secretary of Labor pursuant to Title 29 Part 1926 and failure to comply may result in imposition of sanctions pursuant to the Contract Work Hours and Safety Standards Act, 40 USC 3701 et seq.

(3) The Contractor shall include the provisions of this paragraph in every subcontract so that such provisions will be binding on each subcontractor. The Contractor shall take such action with respect to any subcontract as the Secretary of Housing and Urban Development or the Secretary of Labor shall direct as a means of enforcing such provisions.

SECTION 00851

DRAWINGS INDEX

TITLE

SHEET NO.

General Legend, Symbols and Drawing Index	G00.10
Site Plan	C00.10
Existing Water Plant Plan	X01.10
Existing Water Plant Sections	X01.20
Water Plant Plan	D01.10
Water Plant Sections	D01.20
Water Plant Schematics	D01.30
Miscellaneous Process Details	D99.10
Water Plant Electrical Plan	E01.10

SECTION 01050.1
FIELD ENGINEERING

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work included: Provide such field engineering services as are required for proper completion of the Work including, but not necessarily limited to:
 - 1. Provide all staking required to construct the facility from base lines established by the Engineer.
 - 2. Establish proper line and levels for installation of utilities.
- B. Related work:
 - 1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
 - 2. Additional requirements for field engineering also may be described in other Sections of these Specifications.
 - 3. Section 01720 - Project Record Drawings.
 - 4. Section 02751 - Plant Piping, Valves and Appurtenances.

1.2 QUALITY ASSURANCE

- A. Provide a competent survey party and surveying instruments for staking the work.
- B. Exercise proper precautions to verify the figures shown on the Drawings prior to laying out any part of the Work.
 - 1. The Contractor will be held responsible for any errors therein that otherwise might have been avoided.
 - 2. Promptly inform the Engineer of any error or discrepancies discovered in the Drawings or Specifications in order that proper corrections may be made.

1.3 PROCEDURES

- A. Locate and protect control points before starting work on the site.
- B. Preserve permanent reference points during progress of the Work.
- C. Do not change or relocate reference points or items of the Work without specific approval from the Engineer.
- D. Promptly advise the Engineer when a reference point is lost or destroyed, or requires relocation because of other changes in the Work.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION (NOT APPLICABLE)

END OF SECTION

FIELD ENGINEERING
01050-1

NONRESIDENT TAXPAYER REGISTRATION
AFFIDAVIT INCOME TAX WITHHOLDING

Mail to: The company or individual you are contracting with.

The undersigned nonresident taxpayer on oath, being first duly sworn, hereby certifies as follows:

1. Name of Nonresident Taxpayer: _____
2. Trade Name, if applicable (Doing Business As):

3. Mailing Address: _____
4. Federal Employer Identification Number (FEI): _____
5. _____ Hiring or Contracting with:
Name: _____
Address: _____
_____ Receiving Rentals or Royalties From:
Name: _____
Address: _____
_____ Beneficiary of Trusts and Estates:
Name: _____
Address: _____
6. I hereby certify that the above named nonresident taxpayer is currently registered with (check the appropriate box):
☐ The South Carolina Secretary of State or
☐ The South Carolina Department of Revenue
 Date of Registration: _____

7. I understand that by this registration, the above named nonresident taxpayer has agreed to be subject to the jurisdiction of the South Carolina Department of Revenue and the courts of South Carolina to determine its South Carolina tax liability, including estimated taxes, together with any related interest and penalties.

8. I understand the South Carolina Department of Revenue may revoke the withholding exemption granted under Code Sections 12-8-540 (rentals), 12-8-550 (temporarily doing business or professional services in South Carolina), and 12-8-570 (distributions to nonresident beneficiary by trusts or estates) at any time it determines that the above named nonresident taxpayer is not cooperating with the Department in the determination of its correct South Carolina tax liability.

The undersigned understands that any false statement contained herein could be punished by fine, imprisonment or both.

Recognizing that I am subject to the criminal penalties under Code Section 12-54-44 (B) (6) (a) (i), I declare that I have examined this affidavit and to the best of my knowledge and belief, it is true, correct and complete.

Signature of Nonresident Taxpayer (Owner, Partner or Corporate Officer, when relevant) (Seal) _____ Date

If Corporate officer, state title: _____

(Name - Please Print)

INFORMATION
NONRESIDENT TAXPAYER REGISTRATION AFFIDAVIT

Submit this form to the company or individual you are contracting with.

Do not submit this form to South Carolina Department of Revenue.

PURPOSE OF AFFIDAVIT

A person is not required to withhold taxes for a nonresident taxpayer who submits an affidavit certifying that they are registered with either the South Carolina Secretary of State or the South Carolina Department of Revenue.

REQUIREMENTS TO MAKE WITHHOLDING PAYMENTS

Code Section 12-8-550 requires persons hiring or contracting with a nonresident taxpayer to withhold 2% of each payment made to the nonresident where the payments under the contract exceed \$10,000. However, this section does not apply to payments on purchase orders for tangible personal property when those payments are not accompanied by services to be performed in this state.

Code Section 12-8-540 requires persons making payment to a nonresident taxpayer of rentals or royalties at a rate of \$1,200 or more a year for the use of or for the privilege of using property in South Carolina to withhold 7% of the total of each payment made to a nonresident taxpayer who is not a corporation and 5% if the payment is made to a corporation.

Code Section 12-8-570 requires trusts or estates making distribution of South Carolina taxable income to a nonresident beneficiary to withhold 7% of the beneficiary's distribution which is attributable to South Carolina taxable income.

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SECTION 01060

REGULATORY REQUIREMENTS

- A. The following requirements of Regulatory Agencies having an interest in this project are hereby made a part of this Contract.
- B. The construction of the project, including the letting of contracts in connection therewith, shall conform to the applicable requirements of State, territorial, and local laws and ordinances to the extent that such requirements do not conflict with Federal laws and this subchapter.
- C. South Carolina Sales Tax: All applicable South Carolina sales tax shall be to the account of the Contractor.
- D. Use of chemicals: All chemicals used during the project construction or furnished for project operation, whether herbicide, pesticide, disinfectant, polymer, reactant or of other classification, must show approval of EPA or USDA. Use of all such chemicals and disposal of residues shall be in strict conformance with instructions.
- E. Safety and Health Regulations: The Contractor shall comply with the Department of Labor Safety and Health Regulations for construction promulgated under the Occupational Safety and Health Act of 1970 (PL 91-596) and under Section 107 of the Contract Work Hours and Safety Standards Act (PL 91-54).
- F. Hazardous gas safety:
 - 1. In accordance with 29 CFR 1910.119(h)(2)(I) (Process Safety Management Standard), Contractor to provide the following information when working on or around the gas chlorination or sulfur dioxide process:
 - a. Copy of Contractor Safety Program; and the following for the year to date and the previous year.
 - b. Total OSHA Recordable Case Rate.
 - c. Total OSHA Lost Workday Case Rate.
 - d. Total Lost Workday Cases Away From Work.
 - e. Fatalities.
 - f. Worker's Compensation Insurance Experience Modification Rate.
 - g. OSHA Inspections.
 - h. OSHA Citations.
 - 2. Assure that each employee is trained in the work practices necessary to safely perform his or her job.
 - 3. Assure that each employee is instructed in the known potential fire, explosion, or toxic release hazards related to his or her job and the process, and the applicable provisions of the emergency action plan.
 - 4. Document that each employee has received and understood the training required by 29 CFR 1910.119 and prepare a record containing the employee identity, training date and means used to verify that the employee understood the training.
 - 5. Assure that each employee follows the safety rules and procedures of the facility including the safe practices per 29 CFR 1910.119(f)(4).
 - 6. Advise the Owner of any unique hazards presented by the work, or of any hazards are found.
- G. The Contractor shall comply with Part V of the South Carolina Manual on Uniform Traffic Control Devices for Streets and Highways.

- H. The Contractor shall comply with Part V - Department of Transportation 49 CFR, Part 40 and Part 199 Drug and Alcohol Testing Requirements, as published in the Federal Register on November 21, 1989 and any amendment thereto.
- I. Inspection by Agencies: The representatives of the South Carolina Department of Health and Environmental Control, USDA Rural Development, Environmental Protection Agency, and the Corps of Engineers shall have access to the work wherever it is, in preparation or in progress, and the Contractor shall provide proper facilities for such access and inspection.
- J. Withholding for non-residents shall comply with the following:
1. Attention of non-resident Contractors is invited to Code Sections 12-8-540 and 12-8-550 as amended effective July 1, 1994, Section 49, Appropriations Bill, Part II.
 2. If a non-resident Contractor is the successful bidder on this project, he shall be required to provide the Owner with an Affidavit (Form I-312, Nonresident Taxpayer Registration Affidavit Income Tax Withholding) affirming registration with the South Carolina Department of Revenue or the South Carolina Secretary of State's office. (See attached form).
 3. Forms to register for all taxes administered by the South Carolina Department of Revenue may be obtained by calling the License and Registration Section at (803) 737-4872 or writing to South Carolina Department of Revenue, Registration Unit, Columbia, South Carolina 29214-0140.
 4. In the absence of an Affidavit being provided, withholding in the amount of two (2) percent of the contract price will be made by the Owner.
- K. Bypassing of wastewater: No wastewater bypassing will be permitted during construction unless a schedule has been approved by the South Carolina Department of Health and Environmental Control, if required pursuant to the terms of the NPDES permit.
1. Schedule work to minimize bypassing.
 2. Coordinate all work which will affect operation of the existing treatment facility with the Owner and the Engineer to assure the least interruption possible in operation of the existing facilities.
 3. Make no connections to the existing treatment facility diverting flow to the new facility until directed by the Engineer.

END OF SECTION

Attachment

SECTION 01061

PERMITS AND RIGHTS-OF-WAY

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work included: This section establishes requirements pertaining to the securement and payment for licenses, building permits, rights-of-way, etc., necessary for the construction of the project.
- B. Work not included: The Owner will obtain and provide to the Contractor, as required, copies of:
 - 1. Easements obtained to cross private property.
 - 2. South Carolina Department of Health and Environmental Control, Permit to Construct.
- C. Related work: Documents affecting work of this section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these specifications.

1.2 SUBMITTALS

- A. Submit to the Engineer satisfactory evidence that all necessary licenses, building permits, etc., have been secured prior to commencing the work.

PART 2 - PRODUCTS

No products are required for this work.

PART 3 - EXECUTION

3.1 BUSINESS LICENSE

- A. Determine licenses necessary to perform the work at project location.
- B. Obtain all necessary licenses at no additional cost to the Owner.

3.2 BUILDING PERMITS

- A. Secure and pay for all building permits required, whether of temporary or permanent nature

3.3 RIGHTS-OF-WAY, UTILITY LINES

- A. Owner will provide necessary rights-of-way or easements for construction of utility lines, whether on privately or publicly owned property.
- B. The Contractor shall confine his activities to the construction easements as shown on the plans.
 - 1. Contact the ENGINEER for rights-of-way as actually obtained.
- C. The Owner will provide no right-of-way over other property.

3.4 LAND

- A. The necessary land for construction of treatment facilities, pump stations, etc., will be provided by the Owner.

END OF SECTION

Section 01062

PERMIT-REQUIRED CONFINED SPACES

Bidders are advised that the proposed work may involve entry into permit-required confined spaces (permit spaces) as defined by 29 CFR Section 1910.146. The City of Florence has determined that the workplace (project site) contains permit spaces which include, but are not limited to, sanitary sewer manholes; storm drainage manholes, catch basins and junction boxes; sanitary sewer lines; storm drainage lines; sewage pump stations and pump station wetwells; and structures and tanks associated with the unit processes at the water treatment and wastewater treatment plants. Permit space entry will be allowed by the City of Florence only upon certification by the contractor that his permit space program meets the requirements of 29 CFR Section 1910.146.

The permit spaces referenced above may potentially have hazardous atmospheres due to the presence of sewer gases or may pose a threat due to engulfment in liquids. City of Florence personnel have, in the past, encountered potentially hazardous atmospheres such as low/no oxygen and high hydrogen sulfide concentrations. City of Florence personnel, using appropriate permit space entry and work procedures, have been able to perform normal operation and maintenance procedures in these areas. There are no records of injuries or fatalities involving City personnel in these areas. Bidders are cautioned that this work experience by City personnel should not be misconstrued as suggesting that hazardous conditions will not be encountered by the contractor's forces.

The City of Florence does not intend to undertake any special precautions or procedures to protect the contractor's personnel during the performance of the contract work. This contract will not require that City personnel enter permit spaces concurrently with the contractor's personnel. Therefore, the contractor will be solely responsible for the safety of his personnel and for the administration of his permit space program.

At the conclusion of entry operations, and prior to final payment, the City will debrief the contractor regarding the permit space program followed. The City will also debrief the contractor regarding hazards confronted or created in permit spaces during entry operations.

SECTION 01090

REFERENCE STANDARDS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Throughout the Project Documents, reference is made to specifications and standards issued by nationally recognized professional and/or trade organizations.
1. These referenced standards are generally identified by abbreviating the name of the organization following with the specification/standard number.
 2. Unless specifically indicated otherwise, all references to standards refer to the latest edition available at the time of the bidding.

1.2 ABBREVIATIONS

- A. Wherever the following abbreviations are used in these Project Documents, they are to be construed the same as the respective expressions represented:

AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
AISC	American Institute of Steel Construction
ALS	American Lumber Standards
ANSI	American National Standards Institute, Inc.
ASTM	American Society for Testing and Materials
AWWA	American Water Works Association
AWPA	American Wood Preservers Association
AWS	American Welding Society
FSS	Federal Specifications and Standards, General Services Administration
IBC	International Building Code
NACE	National Association of Corrosion Engineers
NFPA	National Fire Protection Association
NSF	Formerly: National Sanitary Foundation
OSHA	Occupational Safety and Health Administration
SPIB	Southern Pine Inspection Bureau
SSPC	Steel Structures Painting Council

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION (NOT APPLICABLE)

END OF SECTION

SECTION 01200

CONTRACTOR/SUBCONTRACTOR QUALIFICATIONS

PART 1 - GENERAL

The following information and completed forms may be requested by the Owner of the three lowest bidders. The request will be made within five (5) days following the bid opening. Requested data to be received by the Owner within ten (10) days of the request. Failure to provide the data in this section, upon request, will subject bidder to disqualification.

1.1 DESCRIPTION

- A. Information submitted will be used by the Owner to determine the competency and ability of the Contractor/Subcontractor to perform the scheduled work in a manner deemed satisfactory to the Owner. The Owner's decision shall be final.
- B. Any Subcontractor used by the General Contractor whose portion of this project exceeds 5% of the total bid price shall be required to provide the same information as the General Contractor.
- C. The Contractor/Subcontractor shall include with this section a detailed financial statement indicating the Contractor's/ Subcontractor's financial resources. The information on that statement shall be certified by a Certified Public Accountant and shall be submitted on the Associated General Contractor's of America form "Standard Questionnaires and Financial Statement for Bidders".
- D. The Contractor/Subcontractor shall certify by attaching his signature to this Section as provided that all information contained herein is complete and all statements and answers are accurate and true. Providing misinformation, incomplete information, inaccurate information, or failure to certify the information, will subject bidder to disqualification.

1.2 QUALIFICATIONS

- A. Complete the following (attach additional sheets as required):

Name: _____

Address: _____

City, State, Zip: _____

Principal: _____

- B. Number of years your firm has been in business: _____
- C. List and describe a minimum of five (5) previous projects of similar size and nature completed in the last ten (10) years. (Attach additional sheets, if necessary):

1. _____

2. _____

3. _____

4. _____

5. _____

D. List Owner, contact and telephone number for each of the five (5) projects referenced above. (Attach additional sheets, if necessary):

1. _____

2. _____

3. _____

4. _____

5.

E. For the projects listed in Item C, list the original bid price, final construction costs, specified completion time, actual completion time and explanations for differences in costs and times as required. (Attach additional sheets, if necessary):

1. Original contract price:

Final construction price:

Specified completion time:

Actual completion time:

Explanation:

2. Original contract price:

Final construction price:

Specified completion time:

Actual completion time:

Explanation:

3. Original contract price:

Final construction price:

Specified completion time:

Actual completion time:

Explanation:

- _____
- _____
- _____
- _____
4. Original contract price: _____
- Final construction price: _____
- Specified completion time: _____
- Actual completion time: _____
- Explanation: _____
- _____
- _____
- _____

5. Original contract price: _____
- Final construction price: _____
- Specified completion time: _____
- Actual completion time: _____
- Explanation: _____
- _____
- _____
- _____

F. List the names, addresses and work of any portion of this project which will be subcontracted (more than 1% of the bid price). (Attach additional sheets, if necessary):

1. _____
2. _____
3. _____
4. _____
5. _____

CONTRACTOR/SUBCONTRACTOR QUALIFICATIONS
01200-4

G. List equipment owned that is available for this project:

H. List equipment to be purchased, leased or rented to perform this work:

I. List superintendent(s), foremen or others in charge who will be assigned to this project. Provide resumes and qualifications (insert sheets as required):

J. List and describe current projects, current status of job and estimated schedule of completion. (Attach additional sheets, if necessary):

1.

2.

3.

K. List past projects completed with Owner of project proposed in last fifteen (15) years. (Attach additional sheets, if necessary):

1.

2.

- L. List past projects bid on with Owner of project proposed in last fifteen (15) years.
(Attach additional sheets, if necessary):

1. _____

2. _____

3. _____

4. _____

5. _____

- M. List all past projects completed with Engineer in past fifteen (15) years (use additional sheets, if necessary):

1. Project Name: _____
Project Manager: (Engineer's) _____
Original Contract Price: _____
Final Construction Price: _____
Specified Completion Time: _____
Actual Completion Time: _____
Explanation: _____

2. Project Name: _____
Project Manager: (Engineer's) _____
Original Contract Price: _____
Final Construction Price: _____

CONTRACTOR/SUBCONTRACTOR QUALIFICATIONS
01200-6

Specified Completion Time: _____

Actual Completion Time: _____

Explanation: _____

3. Project Name: _____

Project Manager: (Engineer's) _____

Original Contract Price: _____

Final Construction Price: _____

Specified Completion Time: _____

Actual Completion Time: _____

Explanation: _____

N. List all projects involving litigation, arbitration and/or mediation in past twenty (20) years (Attach additional sheets, if necessary):

1. Project Name: _____

Owner: _____

Engineer: _____

Date: _____
Explanation: _____
Result: _____

2. Project Name: _____
Owner: _____
Engineer: _____
Date: _____
Explanation: _____
Result: _____

3. Project Name: _____
Owner: _____
Engineer: _____
Date: _____
Explanation: _____
Result: _____

O. Attach rate schedule for equipment, labor, overhead and profit.

☐ Rate schedule attached.

P. Additional information:

CONTRACTOR/SUBCONTRACTOR QUALIFICATIONS
01200-8

I HEREBY CERTIFY that as a duly authorized representative of _____ (bidder), the information provided is to the best of my knowledge accurate and that failure to provide accurate information will result in disqualification of my bid.

(SEAL)

Signature

Name (Please Print)

Title

Date

Notary Public for South Carolina _____

My Commission Expires: _____

END OF SECTION

SECTION 01210
PRECONSTRUCTION CONFERENCE

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work included: To help clarify construction contract administration procedures, the Engineer will conduct a Preconstruction Conference prior to start of the Work. Provide attendance by the designated personnel.
- B. Related work: Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplemental General Conditions, and Sections in Division 1 of these Specifications.

1.2 QUALITY ASSURANCE

- A. For those persons designated by the Contractor, his subcontractors, and suppliers to attend the Preconstruction Conference, provide required authority to commit the entities they represent to solutions agreed upon in the Conference.

1.3 SUBMITTALS

- A. To the maximum extent practicable, advise the Engineer at least 24 hours in advance of the Conference as to items to be added to the agenda.
- B. The Engineer will compile minutes of the Conference, and will furnish three copies of the minutes to the Contractor and required copies to the Owner. The Contractor may make and distribute such other copies as he wishes.

1.4 PRECONSTRUCTION CONFERENCE

- A. The Conference will be scheduled to be held within 30 working days after the Owner has determined the low bidder and may be held prior to issuance of the Notice to Proceed when required by regulatory agencies having jurisdiction. In any event, the Conference will be held prior to actual start of the work.
- B. Attendance:
 - 1. Provide attendance by authorized representatives of the Contractor and major subcontractors.
 - 2. The Engineer will advise other interested parties, including the Owner, and request their attendance.
- C. Minimum agenda: Data will be distributed and discussed on:
 - 1. Organizational arrangement of Contractor's forces and personnel and those of subcontractors, materials suppliers, and the Engineer.
 - 2. Channels and procedures for communication.
 - 3. Construction schedule, including sequence of critical work.
 - 4. Contract Documents, including distribution of required copies of Drawings and revisions.
 - 5. Processing of Shop Drawings and other data submitted to the Engineer for review.
 - 6. Processing of field decisions and Change Orders.
 - 7. Rules and regulations governing performance of the Work.

8. Procedures for security, quality control, housekeeping, and related matters.

PART 2 – PRODUCTS (NOT APPLICABLE)

PART 3 – EXECUTION (NOT APPLICABLE)

END OF SECTION

SECTION 01220
PROJECT MEETINGS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work included: To enable orderly review during progress of the Project, and to provide for systematic discussion of problems, the Engineer will conduct project meetings throughout the construction period.
- B. Related work:
 - 1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplemental General Conditions, and Sections in Division 1 of these Specifications.
 - 2. The Contractor's relations with his subcontractors and materials suppliers, and discussions relative thereto, are the Contractor's responsibility and normally are not part of project meetings content.

1.2 QUALITY ASSURANCE

- A. For those persons designated by the Contractor to attend and participate in project meetings, provide required authority to commit the Contractor to solutions agreed upon in the project meetings.

1.3 SUBMITTALS

- A. Agenda items: To the maximum extent practicable, advise the Engineer at least 48 hours in advance of project meetings regarding items to be added to the agenda.
- B. Minutes:
 - 1. The Engineer will compile Minutes of each project meeting, and will furnish three copies to the Contractor and required copies to Owner.
 - 2. Recipients of copies may make and distribute such other copies as they wish.

PART 2 - PRODUCTS

(No products are required in this Section)

PART 3 - EXECUTION

3.1 MEETING SCHEDULE

- A. Project meetings will be held monthly.
- B. Coordinate as necessary to establish mutually acceptable schedule for meetings.

3.2 MEETING LOCATION

- A. Project meetings will be held at the office of the Engineer.

3.3 PROJECT MEETINGS

A. Attendance:

1. To the maximum extent practicable, assign the same person or persons to represent the Contractor at project meetings throughout progress of the Work.
2. Subcontractors, materials suppliers, and others may be invited to attend those project meetings in which their aspect of the Work is involved.

B. Minimum agenda:

1. Review, revise as necessary, and approve Minutes of previous meetings.
2. Review progress of the Work since last meeting, including status of submittals for approval.
3. Identify problems that impede planned progress.
4. Develop corrective measures and procedures to regain planned schedule.
5. Complete other current business.

C. Revisions to Minutes:

1. Unless published Minutes are challenged in writing prior to the next regularly scheduled progress meeting, they will be accepted as properly stating the activities and decisions of the meeting.
2. Persons challenging published Minutes shall reproduce and distribute copies of the challenge to all Minutes.
3. Challenge to Minutes shall be settled as priority portion of "old business" at the next regularly scheduled meeting.

END OF SECTION

SECTION 01310
CONSTRUCTION SCHEDULES

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work included: To assure adequate planning and execution of the Work so that the Work is completed within the number of calendar days allowed in the Contract, and to assist the Engineer in appraising the reasonableness of the proposed schedule and in evaluating progress of the Work, prepare and maintain the schedules and reports described in this Section.
- B. Related work:
 - 1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplemental General Conditions, and Sections in Division 1 of these Specifications.
 - 2. Requirements for progress schedule: General Conditions.
 - 3. Construction period: Form of Agreement.
- C. Definitions: "Day", as used throughout the Contract unless otherwise stated, means calendar day.

1.2 QUALITY ASSURANCE

- A. Employ a scheduler who is thoroughly trained and experienced in compiling construction schedule data, and in preparing and issuing periodic reports as required below.
- B. Perform data preparation, analysis, charting, and updating in accordance with standards approved by the Engineer.
- C. Reliance upon the approved schedule:
 - 1. The construction schedule as approved by the Engineer will be an integral part of the Contract and will establish interim completion dates for the various activities under the Contract.
 - 2. Should any activity not be completed within 15 days after the stated scheduled date, the Owner shall have the right to require the Contractor to expedite completion of the activity by whatever means the Owner deems appropriate and necessary, without additional compensation to the Contractor.
 - 3. Should any activity be 30 days or more behind schedule, the Owner shall have the right to perform the activity or have the activity performed by whatever method the Owner deems appropriate.
 - 4. Costs incurred by the Owner and by the Engineer in connection with expediting construction activity shall be reimbursed by the Contractor.
 - 5. It is expressly understood and agreed that failure by the Owner to exercise the option either to order the Contractor to expedite an activity or to expedite the activity by other means shall not be considered to set a precedent for any other activities.

1.3 SUBMITTALS

- A. Comply with pertinent provisions of Section 01340.
- B. Preliminary analysis: Within 10 calendar days after the Contractor has received the Notice to Proceed, submit one reproducible copy and four prints of a preliminary construction schedule prepared in accordance with Part 3 of this Section.
- C. Construction schedule: Within 10 calendar days after the Contractor has received the Engineer's approval to revisions of a preliminary construction schedule, submit one reproducible copy and four prints of a construction schedule prepared in accordance with Part 3 of this Section.
- D. Periodic reports: On the first working day of each month following the submittal described in Paragraph 1.3.C above, submit four prints of the construction schedule updated as described in Part 3 of this Section.

PART 2 - PRODUCTS

2.1 CONSTRUCTION ANALYSIS

- A. Graphically show by bar chart the order and interdependence of all activities necessary to complete the work, and the sequence in which each activity is to be accomplished, as planned by the Contractor and his project field superintendent in coordination with all subcontractors whose work is shown on the diagram.
 - 1. Provide two line bar chart; one for planned activity, and one for actual completion.
- B. Include, but do not necessarily limit indicated activities to:
 - 1. Project mobilization.
 - 2. Submittal and approval of shop drawings and samples.
 - 3. Procurement of equipment and critical materials.
 - 4. Fabrication of special material and equipment, and its installation and testing.
 - 5. Final cleanup.
 - 6. Final inspecting and testing.
 - 7. All activities by the Engineer that affect progress, required dates for completion, or both, for all and each part of the Work.

PART 3 - EXECUTION

3.1 PRELIMINARY ANALYSIS

- A. Contents:
 - 1. Show all activities of the Contractor under this Work for the period between receipt of Notice to Proceed and submittal of construction schedule.
 - 2. Show the Contractor's general approach to remainder of the Work.
 - 3. Show cost of all activities scheduled for performance before submittal and approval of the construction schedule.

3.2 CONSTRUCTION SCHEDULE

- A. Provide a construction schedule incorporating all revisions from review of the preliminary analysis.

3.3 PERIODIC REPORTS

- A. Provide monthly updates of the approved construction schedule.
 - 1. Indicate "actual" progress for each activity on the bar chart.
 - 2. Provide written narrative summary of revisions causing delay in the program, and an explanation of corrective actions taken or proposed.

3.4 REVISIONS

- A. Make periodic revisions to the schedule to incorporate delays, early completion, etc.
- B. Make only those revisions to approved construction schedule as are approved in advance by the Engineer.

END OF SECTION

SECTION 01340

SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work included: Make submittals required by the Contract Documents and revise and resubmit as necessary to establish compliance with the specified requirements.
- B. Related work:
 - 1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplemental General Conditions, and Sections in Division 1 of these specifications.
 - 2. Individual requirements for submittals also may be described in pertinent sections of these specifications.
- C. Work not included:
 - 1. Unrequired submittals will not be reviewed by the Engineer.
 - 2. The Contractor may require his subcontractors to provide drawings, setting diagrams, and similar information to help coordinate the work, but such data shall remain between the Contractor and his subcontractors and will not be reviewed by the Engineer.

1.2 QUALITY ASSURANCE

- A. Coordination of submittals:
 - 1. Prior to each submittal, carefully review and coordinate all aspects of each item being submitted.
 - 2. Verify that each item and the submittal for it conform in all respects with the specified requirements.
 - 3. By affixing the Contractor's signature to each submittal, certify that this coordination has been performed.
 - 4. Review and coordinate each Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents.
- B. Completeness of submittal:
 - 1. Data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide and to enable Engineer to review the information for the limited purposes.
 - 2. Determine and verify all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto.
- C. "Or equal":
 - 1. Where the phrase "or equal" occurs in the Contract Documents, do not assume that the materials, equipment or methods will be considered as

equal unless the item has been specifically so approved for this Work by the Engineer.

a. Cross out or strikethrough all data not pertinent to the submittal.

2. The decision of the Engineer shall be final.

D. The Engineer shall assume that no shop drawing or related submittal comprises a variation unless the Contractor advises the Engineer otherwise in writing.

1.3 SUBMITTALS

A. Within 15 calendar days after the Contractor has received the Owner's notice to proceed, submit:

1. Schedule for submittals including specification section, type of submittal and submittal date.
2. Construction schedule.
3. Schedule of partial payment requests.

B. Make submittals of shop drawings, samples, substitution requests and other items in accordance with the provisions of this Section.

PART 2 - PRODUCTS

2.1 SHOP DRAWINGS

A. Scale and measurements: Make shop drawings accurately to a scale sufficiently large to show all pertinent aspects of the item and its method of connection to the Work.

B. Large prints (11" x 17" or larger):

1. Submit shop drawings in the form of white copies.
2. Blueprints will not be acceptable.

C. Manufacturer's literature:

1. Where contents of submitted literature from manufacturers includes data not pertinent to the submittal, clearly show which portions of the contents are being submitted for review.
2. Submit the number of copies which are required to be returned, plus four copies of electrical and three copies of all other submittals which will be retained by the Engineer.

D. Number of copies:

1. Submit the number of copies which are required to be returned, plus three copies which will be retained by the Engineer.
2. Electrical shop drawings: submit the number of copies which are required to be returned, plus four copies which will be retained by the Engineer.

E. Do not begin fabrication of equipment or materials prior to Engineer's approval of shop drawings.

2.2 VARIATIONS

- A. With each submittal, provide specific written notice of any variations, that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be both a written communication separate from the Shop Drawings or Sample submittal; and, in addition, by a specific notation made on each Shop Drawing or Sample submitted to Engineer for review and approval of each such variation.
- B. Provide an explanation of why the item(s) submitted are considered to be equal to the item(s) specified.
- C. Failure to submit a written notice will result in rejection of the submittal.

2.3 SAMPLES

- A. Provide sample or samples identical to the precise article proposed to be provided. Identify as described under "Identification of submittals" below.
- B. Number of samples required:
 - 1. Unless otherwise specified, submit samples in the quantity which is required to be returned, plus one which will be retained by the Engineer.
 - 2. By prearrangement in specific cases, a single sample may be submitted for review and, when approved, be installed in the work at a location agreed upon by the Engineer.

2.4 COLORS AND PATTERNS

- A. Unless the precise color and pattern is specifically called out in the Contract Documents, and whenever a choice of color or pattern is available in the specified products, submit accurate color and pattern charts to the Engineer for selection.

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW OF SUBMITTALS

- A. Before submitting a shop drawing or any related material, Contractor shall:
 - 1. Determine and verify all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto.
 - 2. Determine and verify the suitability of all materials with respect to intended use, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work
 - 3. Review each such submission for conformance with the means, methods, techniques, sequences, and operations of construction, and safety precautions and programs incidental thereto, all of which are the sole responsibility of Contractor.
 - 4. Approve each such submission before submitting it.
 - 5. Stamp and sign each such submission before submitting it.
- B. Shop drawings and related materials shall be returned with comments provided that each submission has been specified and is stamped by the Contractor.

- C. Shop drawings or material not specified or which have not been approved by the Contractor shall be returned without comment.
- D. Contractor is to utilize the following stamp on all shop drawing submittals:

This shop drawing has been reviewed by [NAME OF CONTRACTOR] and approved with respect to the means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incidental thereto. [NAME OF CONTRACTOR] also warrants that this shop drawing complies with contract documents and comprises no variations thereto.	
By:	_____
Date:	_____

- E. Engineer's review and approval shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of the General Conditions and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer's review and approval shall not relieve Contractor from responsibility for complying with the requirements of the General Conditions.

3.2 IDENTIFICATION OF SUBMITTALS

- A. Consecutively number all submittals.
 - 1. When material is resubmitted for any reason, transmit under a new letter of transmittal and with a new transmittal number.
 - 2. On resubmittals, cite the original submittal number for reference.
- B. Accompany each submittal with a letter of transmittal showing all information required for identification and checking.
- C. On at least the first page of each submittal, and elsewhere as required for positive identification, show the submittal number in which the item was included.
- D. Maintain an accurate submittal log for the duration of the work, showing current status of all submittals at all times. Make the submittal log available to the Engineer for his review upon request.

3.3 GROUPING OF SUBMITTALS

- A. Unless otherwise specified, make submittals in groups containing all associated items to assure that information is available for checking each item when it is received.
 - 1. Partial submittals may be rejected as not complying with the provisions of the Contract.
 - 2. The Contractor may be held liable for delays so occasioned.

3.4 TIMING OF SUBMITTALS

- A. Make submittals far enough in advance of scheduled dates for installation to provide time required for reviews, for securing necessary approvals, for possible revisions and resubmittals, and for placing orders and securing delivery.
- B. In scheduling, allow at least twenty-five working days for review by the Engineer following his receipt of the submittal.

3.5 RESUBMITTAL SCHEDULE

- A. For submittals marked "Furnish as Corrected" by the Engineer, resubmittal shall be within ninety (90) days of the review date shown on the Engineer's shop drawing review stamp.
- B. For submittals marked "Revise and Resubmit", "Submit Specified Item", or "Rejected", resubmittal shall be within thirty (30) days of the review date shown on the Engineer's shop drawing review stamp.

3.6 ENGINEER'S REVIEW

- A. Review by the Engineer does not relieve the Contractor from responsibility for errors which may exist in the submitted data.
- B. Engineer will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Engineer.
- C. Engineer's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.
- D. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction (except where a particular means, method, technique, sequence, or procedure of construction is specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto.
- E. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.
- F. Revisions:
 - 1. Make revisions required by the Engineer.
 - 2. If the Contractor considers any required revision to be a change, he shall so notify the Engineer as provided for in the General Conditions.
 - 3. Make only those revisions directed or approved by the Engineer.
 - 4. Submittals which have been reviewed and returned to the Contractor marked "Revise and Resubmit" or "Rejected" and which are resubmitted and not in an approvable state, will not be reviewed a third time unless payment for the third and any subsequent review is by the Contractor. The engineering costs for review shall be equal to the Engineer's charges to the Owner under the terms of the Engineering Agreement with the Owner.

END OF SECTION

SECTION 01410
TESTING LABORATORY SERVICES

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work included:

1. Cooperate with the Owner's selected testing agency and all others responsible for testing and inspecting the work.
2. Provide such other testing and inspecting as are specified to be furnished by the Contractor in this Section and/or elsewhere in the Contract Documents.

B. Related work:

1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplemental General Conditions, and Sections in Division 1 of these specifications.
2. Requirements for testing may be described in various Sections of these specifications.
3. Where no testing requirements are described, but the Owner decides that testing is required, the Owner may require such testing to be performed under current pertinent standards for testing. Payment for such testing will be made as described in this Section.

C. Work not included:

1. Selection of testing laboratory: The Owner will select a prequalified independent testing laboratory.
2. Payment for initial testing: The Owner will pay for all initial services of the testing laboratory as further described in Article 2.1 of this Section.
3. Tests at point of manufacture as specified in other Sections of these documents are to be made with all costs borne by the Contractor.

1.2 QUALITY ASSURANCE

- A. The testing laboratory will be qualified to the Owner's approval in accordance with ASTM E 329.
- B. Testing, when required, will be in accordance with all pertinent codes and regulations, and with selected standards of the American Society for Testing and Materials.

1.3 PRODUCT HANDLING

- A. Comply with pertinent provisions of Section 01640.
- B. Promptly process and distribute required copies of test reports and related instructions to assure necessary retesting and replacement of materials with the least possible delay in progress of the work.

PART 2 - PRODUCTS

2.1 PAYMENT FOR TESTING

A. Initial services:

1. The Owner will pay for initial testing services requested by the Owner.
2. When initial tests indicate non-compliance with the Contract Documents, the costs of initial tests associated with that non-compliance will be deducted by the Owner from the Contract Sum.
3. Retesting: When initial tests indicate non-compliance with the Contract Documents, subsequent re-testing occasioned by the non-compliance shall be performed by the same testing agency and all costs there from will be deducted by the Owner from the contract sum.

2.2 CODE COMPLIANCE TESTING

- A. Inspections and tests required by codes or ordinances, or by a plan approval authority, and which are made by a legally constituted authority, shall be the responsibility of and shall be paid for by the Contractor, unless otherwise provided in the Contract Documents.

2.3 CONTRACTOR'S CONVENIENCE TESTING

- A. Inspecting and testing performed exclusively for the Contractor's convenience shall be the sole responsibility of the Contractor.

PART 3 - EXECUTION

3.1 COOPERATION WITH TESTING LABORATORY

- A. Representatives of the testing laboratory shall have access to the work at all times and at all locations where the work is in progress. Provide facilities for such access to enable the laboratory to perform its functions properly.

3.2 TAKING SPECIMENS

- A. All specimens and samples for testing, and deliveries to laboratory, unless otherwise provided in the Contract Documents, shall be taken by the testing personnel. All sampling equipment and personnel will be provided by the testing laboratory. All deliveries of specimens and samples to the testing laboratory will be performed by the testing laboratory.

3.3 SCHEDULES FOR TESTING

- A. Establishing schedule:
1. By advance discussion with the testing laboratory selected by the Owner, determine the time required for the laboratory to perform its tests and to issue each of its findings.
 2. Provide all required time within the construction schedule.
- B. Revising schedule: When changes of construction schedule are necessary during construction, coordinate all such changes with the testing laboratory as required.
- C. Adherence to schedule: When the testing laboratory is ready to test according to the established schedule, but is prevented from testing or taking specimens due to incompleteness of the work, all extra charges for testing attributable to the delay may be back-charged to the Contractor and shall not be borne by the Owner.

END OF SECTION

TESTING LABORATORY SERVICES
01410-2

SECTION 01640
PRODUCT HANDLING

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work included: Protect products scheduled for use in the work by means including, but not necessarily limited to, those described in this Section.
- B. Related work:
 - 1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these specifications.
 - 2. Additional procedures also may be prescribed in other Sections of these specifications.

1.2 QUALITY ASSURANCE

- A. Include within the Contractor's quality assurance program such procedures as are required to assure full protection of work and materials.

1.3 MANUFACTURERS' RECOMMENDATIONS

- A. Except as otherwise approved by the Engineer, determine and comply with manufacturer's recommendations on product handling, storage and protection.

1.4 PACKAGING

- A. Deliver products to the job site in their manufacturer's original container, with labels intact and legible.
 - 1. Maintain packaged materials with seals unbroken and labels intact until time of use.
 - 2. Promptly remove damaged material and unsuitable items from the job site and promptly replace with material meeting the specified requirements, at no additional cost to the Owner.
- B. The Engineer may reject as non-complying such material and products that do not bear identification satisfactory to the Engineer as to manufacturer, grade, quality and other pertinent information.

1.5 PROTECTION OF MATERIAL AND WORK

- A. General:
 - 1. Carefully and properly protect all materials of every description, both before and after being used in the Work in accordance with manufacturer's recommendations.
 - 2. Provide any enclosing or special protection from weather deemed necessary by the Engineer at no additional cost to the Owner.
- B. Partial payments under the Contract will not relieve the Contractor from responsibility.

1. When materials and work at the site that have been partially paid for are not adequately protected by the Contractor, such materials will be protected by the Owner at the expense of the Contractor and no further partial payment thereon will be made.
- C. Maintain finished surfaces clean, unmarred, and suitably protected until accepted by the Owner.
- D. No field cutting or other modifications of equipment or materials without written approval of the Engineer.

1.6 STORAGE

- A. Store all items of equipment, component parts, etc., in accordance with the manufacturers' recommendations or as may otherwise be necessary to prevent damage or deterioration of any sort.
- B. Electrical and control equipment:
 1. Store in a dry area protected from dust and humidity.
 2. Equipment can be protected by a weatherproof cover if shipped to the site no more than two (2) weeks prior to installation and energization.

1.7 REPAIRS AND REPLACEMENTS

- A. In the event of damage, promptly make replacements and repairs to the approval of the Engineer and at no additional cost to the Owner.
- B. Additional time required to secure replacements and to make repairs will not be considered by the Engineer to justify an extension in the contract time of completion.

PART 2 – PRODUCTS (NOT APPLICABLE)

PART 3 – EXECUTION (NOT APPLICABLE)

END OF SECTION

SECTION 01650

GENERAL EQUIPMENT REQUIREMENTS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Requirements relating to providing of equipment and services specified in other Sections of these specifications.
- B. Related work:
 - 1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplemental General Conditions, and Sections of Division 1 of these Specifications.
 - 2. Additional provisions concerning this work may be stated in other sections of these specifications.
 - 3. Where new equipment is to be installed into existing structures or systems, verify the plan dimensions with existing dimensions and note any discrepancies on the shop drawings.
- C. Allotted space and modifications:
 - 1. Equipment furnished under this Section shall be installed at the location and in the space allotted on the Contract Drawings.
 - 2. Any structural, piping, wiring, drawings, or other modifications required to accommodate equipment offered other than that shown on the Drawings, or specified, shall be done at no additional cost to the Owner.

1.2 QUALITY ASSURANCE

- A. Equipment manufacturers shall, upon request of the Engineer, provide a detailed list of installations of comparable function.
- B. Equipment in each Section shall be by a single manufacturer regularly engaged in the development of equipment designed for the intended function.
- C. Guarantee the availability of repair parts and service for a period of not less than fifteen (15) years.
 - 1. Provide each component with a serial number and the manufacturer shall maintain records of same.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Supply all materials, tools, equipment, labor and supervision to properly complete installation of equipment, piping, controls, etc., in compliance with the contract documents.

2.2 IDENTIFICATION

- A. Provide stamped identification labels on motors and equipment with pertinent information including serial numbers, model numbers, capacities, voltage, amps, etc.
- B. Label to be aluminum or stainless steel.

- C. Attach with stainless steel or aluminum hardware.

2.3 LUBRICANTS AND LUBRICATING EQUIPMENT

- A. Provide and install necessary oils, greases, etc., for initial operation of equipment.
- B. Where manufacturer's recommendations include changing of initial lubricants after 1,000 hours or less of operation, provide sufficient lubricants to make the change.
- C. Provide one of every type lubricating gun required to properly maintain the equipment.

2.4 OPERATION, MAINTENANCE AND SERVICE MANUALS

- A. Prepare and submit for the Owner's use six (6) copies of O&M Manual for each piece of equipment and two (2) electronic copies in searchable PDFs with and internal table of contents.
 - 1. Submit Manuals 60 days prior to delivery of equipment.
- B. Manuals shall be specific to the equipment supplied.
 - 1. Manuals applicable to many different configurations and which require the operator to selectively read portions of the instructions will not be accepted.
 - 2. The equipment model that the Manual applies to shall be indicated by an arrow.
- C. Provide a Table of Contents specific to each Manual.
- D. At the beginning of each Manual, provide a description of the equipment to include model numbers, purchase order numbers, serial numbers, motor information, and performance and design criteria.
- E. Correlate Manuals with the approved shop drawings and include the following minimum information:
 - 1. Parts list, including recommended spare parts list.
 - 2. Guaranties.
 - 3. Recommended maintenance instructions.
 - 4. Recommended lubricants and lubrication instructions.
 - 5. Address and telephone number of the source for repairs, spare parts and service.
 - 6. Detailed description of operating procedure for the item of equipment specifically written for this installation, including start-up and shutdown procedures.
 - 7. Equipment performance specifications, including pump curves.
 - 8. Results of start-up and any further recommendations resulting from start-up.
 - 9. Current cost for each recommended spare part and agreement to provide updated costs at Owner's request.
- F. Provide a maintenance and lubrication schedule to be a summary of all preventative maintenance and lubrication, including the following information:
 - 1. Title.
 - 2. Type of activity (inspection, adjustment, oil change, etc.).
 - 3. Brief description of activity.
 - 4. Type of lubricant.
 - 5. Frequency (daily, weekly, etc.).

- G. The manufacturer shall provide the Owner with a log chart to record all servicing and maintenance required during the equipment warranty period.
- H. For process oriented equipment, treatment plants, etc., provide a detailed description of the process operation and trouble-shooting of problems.
- I. Provide clear and legible copies. Type parts lists, etc.
- J. Layout and detail drawings shall be reduced to a maximum size of 11" x 17", unless written approval is received from the Engineer prior to submittal of Manuals.
- K. Provide a clearly labeled three-ring binder for Manuals having a thickness greater than 1/4". Provide sheet lifters if binder is more than 2/3 full.
 - 1. Provide multiple binders for Manuals having a thickness greater than 2".

2.5 TECHNICAL INSTRUCTION AND FACE TO FACE TRAINING

- A. Provide technical instruction and training where indicated for each item of equipment.
- B. Schedule each training session at least ten days in advance with the Owner and Engineer and prior to equipment start-up and acceptance by the Owner. The final approved copies of operation and maintenance manuals must have been delivered to the Engineer prior to scheduling the instruction period with the Owner.
- C. Digitally tape each training class and provide the Owner with two (2) copies on DVD.
 - 1. Clearly label each DVD with an adhesive label with the following information.
 - a. Project title.
 - b. City project number.
 - c. Manufacturer name.
 - d. Equipment name.
 - e. Date of instruction.
 - 2. Video each training class in 1080 HD format and provide instructor with wireless microphone for clear audio.
 - a. Submit video/audio documentation complying with this section.

PART 3 - EXECUTION

3.1 GENERAL

- A. Provide information that may be requested without undue delay.
- B. Deliver O&M Manuals to the Engineer for review and approval and transmittal to the Owner.
 - 1. Do not start equipment unless the Owner has approved O&M Manuals.
- C. Properly lubricate all equipment prior to start-up.
- D. Work under sections requiring submittal of O&M Manual will not be considered complete and final payment will not be made until all Manuals have been submitted and approved.
- E. Provide revisions to O&M Manuals to reflect any changes made during installation and start-up of equipment.

3.2 WARRANTY PERIOD

- A. Equipment warranties shall commence upon successful completion of the thirty (30) day operational period after project acceptance by Owner and shall be for a period of one (1) year unless otherwise noted.
- B. Contractor will be notified in writing of beginning and ending dates of warranty period.

END OF SECTION

SECTION 01660
TECHNICAL SERVICES

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work included: Providing technical services to ensure proper installation and training of Owner's personnel in operational procedures for various items of equipment.
- B. Related work:
 - 1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplemental General Conditions, and Sections in Division 1 of these Specifications.
 - 2. Other requirements for technical services are stated in other Sections of these Specifications.

1.2 QUALITY ASSURANCE

- A. Provide services of qualified service engineers, process engineers, or technicians only.
- B. Qualifications of personnel provided shall be subject to approval of the Engineer.
 - 1. Services of personnel found not to be qualified will not be considered a part of the period of service specified.

1.3 SUBMITTALS

- A. Provide credentials of all process engineers for approval 30 days prior to their scheduled period of service.

PART 2 - PRODUCTS

2.1 REPORTS

- A. Provide written copies of reports, certified results of tests, etc. complying with other Sections of these Specifications.

PART 3 - EXECUTION

3.1 GENERAL

- A. Where service is required by a manufacturer, it shall be extended to all other items of equipment provided by him, whether individually specified or not.
- B. A day of service is defined as not less than 8 working hours performed between 7:00 a.m. and 7:00 p.m., unless otherwise required.
- C. A trip is defined as a scheduled visit to the project site for the express purpose of providing technical services specified.
- D. Travel time to or from the project site is not a part of the service time.

3.2 PERIOD OF SERVICE

- A. Provide number of days service and number of trips as indicated in individual equipment sections.

3.3 FIELD MEASUREMENTS

- A. Measure and record amperage, voltage, and speed (rpm) at operating conditions of the equipment.
- B. Include all measurements of the equipment.

END OF SECTION

SECTION 01670
START-UP SERVICES

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work included: Provide personnel to place all equipment in operation, fine tune treatment processes and instruct Owner's personnel in operation and maintenance procedures.
- B. Related work:
 - 1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplemental General Conditions, and Sections in Division 1 of these specifications.
 - 2. Other provisions concerning Start-up Services may also be stated in other Sections of these specifications.

1.2 QUALITY ASSURANCE

- A. Use adequate numbers of skilled personnel who are thoroughly trained and experienced in the necessary procedures and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- B. Provide manufacturers technical services as specified or needed.

PART 2 - PRODUCTS

No products are required under this Section.

PART 3 - EXECUTION

3.1 GENERAL

- A. Upon final completion of all components, the Contractor shall be responsible for placing the plant in initial operation.
- B. Provide personnel on the job site for first 30 days of operation, or until successful operation is attained, whichever is the longest.

3.2 SCHEDULING

- A. Determine date of start-up jointly with Engineer and Owner.
- B. Schedule services of manufacturers technical personnel jointly with Engineer prior to date of start-up.

3.3 FIELD MEASUREMENTS

- A. Measure and record amperage, voltage, and speed (rpm) at operating conditions of the equipment.
- B. Include all measurements in the start-up report.

3.4 COMPLETION

- A. Start-up services will not be considered completed until all equipment is operating properly and treatment processes are functioning as designed.

END OF SECTION

SECTION 01700
CONTRACT CLOSEOUT

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work included shall be providing compliance with the requirements of the General Conditions of these Specifications for administrative procedures in closing out the project work.
- B. Related work:
 - 1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplemental General Conditions, and Sections in Division 1 of these Specifications.
 - 2. Other requirements for technical services are stated in other sections of these Specifications.
 - 3. Section 00690 - Contractor's Affidavit.
 - 4. Section 01660 - Technical Services.
 - 5. Section 01670 - Start-up Services.
 - 4. Section 01720 - Project Record Documents.

1.2 SUBSTANTIAL COMPLETION

- A. The Contractor shall notify the Engineer that, in his opinion, the project is substantially complete. A written statement listing items complete shall be submitted.
- B. Upon receipt of the Contractor's notice, the Engineer shall make an observation to determine if substantial completion is provided.
- C. If, in the Engineer's opinion, the project is not substantially complete, a written notice to the Contractor shall follow outlining reasons and deficiencies in work that comprised the Engineer's decision. The Engineer's decision shall be final.

1.3 FINAL OBSERVATION

- A. The Engineer will make a final observation for the Contractor after all items noted in the substantial completion observation have been corrected. The Contractor shall notify the Engineer in writing when a final observation is needed. Incomplete and/or defective work shall be given to the Contractor by written notice.

1.4 REOBSERVATION

- A. Re-observation required due to failure by the Contractor to make previously noted corrections will be performed by the Engineer.
- B. Cost for such observations will be due to and payable by the Contractor at a rate equal to charges to the Owner for similar work.
- C. Re-observations will continue until the work is acceptable to the Engineer.

1.5 COMPLETION BY CONTRACTOR

- A. When the Engineer finds the Contractor's work acceptable, the Contractor shall be given such notice and should proceed with closeout submittals.
- B. Closeout submittals shall contain at least the following:
 - 1. Project record documents.
 - 2. Equipment operation and maintenance manuals and copies of start-up reports.
 - 3. Warranties and bonds.
 - 4. Keys and keying schedule.
 - 5. Spare parts and manuals.
 - 6. Evidence of payment and release to liens per General Conditions.
 - 7. Section 00690 - Contractor's Affidavit.

1.6 FINAL PAYMENT

- A. Final payment to the Contractor will be made upon completion of the previous items and others required by these specifications. A final statement shall be forwarded to the Engineer. The statement shall address:
 - 1. Previous change orders.
 - 2. Unit prices.
 - 3. Deductions for uncorrected work.
 - 4. Deductions for liquidated damages.
 - 5. Deductions for re-testing work.
 - 6. Deductions for re-observation.
 - 7. Deductions for shop drawing review.
 - 8. Adjusted contract sum.
 - 9. Previous payments.
 - 10. Amount due.
- B. When required, the Engineer will prepare a contract change order for adjustments not previously made.

PART 2 – PRODUCTS (NOT APPLICABLE)

PART 3 – EXECUTION (NOT APPLICABLE)

END OF SECTION

CONTRACT CLOSEOUT
01700-2

SECTION 01720
PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work included:
 - 1. Throughout progress of the Work, maintain an accurate record of changes in the Contract Documents, as described in Article 3.1 below.
 - 2. Upon completion of the Work, deliver the recorded changes to the Engineer.
- B. Related work:
 - 1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplemental General Conditions, and Sections in Division 1 of these specifications.
 - 2. Other requirements affecting Project Record Documents may appear in pertinent other Sections of these specifications.

1.2 QUALITY ASSURANCE

- A. Delegate the responsibility for maintenance of Record Documents to one person on the Contractor's staff as approved by the Engineer.
- B. Accuracy of records shall be such that future search for items shown on the Project Record Documents may rely reasonably on the information provided under this Section of the Work.

1.3 SUBMITTALS

- A. The Engineer's approval of the current status of Project Record Documents may be a prerequisite to the Engineer's approval of requests for progress payment and request for final payment under the Contract.
- B. Prior to submitting each request for progress payment, secure the Engineer's approval of the current status of the Project Record Documents.
- C. Prior to submitting request for final payment, submit the final Project Record Documents to the Engineer and secure his approval.

1.4 PRODUCT HANDLING

- A. Maintain the job set of Record Documents completely protected from deterioration and from loss and damage until completion of the Work and transfer to the Engineer.
- B. In the event of loss of recorded data, use means necessary to again secure the data to the Engineer's approval.
 - 1. Such means shall include, if necessary in the opinion of the Engineer, removal and replacement of concealing materials.
 - 2. In such case, provide replacements to the standards originally required by the Contract Documents.

PART 2 - PRODUCTS

2.1 JOB SET DOCUMENTS

- A. Promptly following receipt of the Owner's Notice to Proceed, secure from the Engineer, at no charge to the Contractor, one complete set of all Documents comprising the Contract and one complete set of blank record drawing sketches.

PART 3 - EXECUTION

3.1 MAINTENANCE OF JOB SET

- A. Immediately upon receipt of the job set and the record drawing sketches described in above paragraph titled "JOB SET DOCUMENTS", identify each of the Documents with the title, "RECORD DOCUMENTS - JOB SET".
- B. Preservation:
 - 1. Considering the Contract completion time, the probable number of occasions upon which the job set must be taken out for new entries and for examination, and the conditions under which these activities will be performed, devise a suitable method for protecting the job set to the approval of the Engineer.
 - 2. Do not use the job set for any purpose except entry of new data and for review by the Engineer.
 - 3. Maintain the job set at the site of Work as that site is designated by the Engineer.
- C. Field work and making entries: (The following items are to be clearly marked on the Job Set Drawings. The contractor is also required to fill out all appropriate information on the record drawings sketches):
 - 1. Use erasable colored pencil, preferably red (not ink or indelible pencil) to delineate changes.
 - 2. Show by station number location of all fittings, manholes, valves, fire hydrants, water meters, etc.
 - 3. Water meters are to be sketched at the proper location on the job set drawings and issued a sequential number for each meter (1,2,3 etc..). The matching number is to be written on the corresponding individual water meter record drawing sketch. If house numbers are available, include it on both the job set drawings and the record drawing sketches as well. In most cases, the meter is to be referenced to the center of the parallel roadway and laterally to a house corner as shown on the record drawing sketches. However, if the existing house is greater than 200' from the roadway, another above ground feature is to be referenced and clearly identified.
 - 4. Reference all pipelines from the center of the parallel roadway at least every 100 feet or where changes occur in the direction of the pipeline.
 - 5. Reference all bores from the center of the roadway to the beginning and end of the casing and ductile iron pipe. Depths of bury must also be provided.
 - 6. Reference all stream crossings and their distance from the center of the parallel roadway and the bridge or other obstruction. A profile of the stream crossing shall also be provided to show the depth of the pipeline under the stream.
 - 7. Field measure and reference all fittings and valves to two aboveground items reasonably safe from being relocated and indicate such references on the drawings. If the above ground item used does not appear on the drawings, it

is to be sketched at the proper location and identified as power pole, telephone pedestal, driveway center, etc...

8. Show location of electrical conduit, pull boxes, etc.

D. Submittal:

1. Submit "marked-up" set of job set drawings and record drawing sketches to the Engineer monthly.
2. Make any necessary additions as required by the Engineer.

END OF SECTION

SECTION 02060

DEMOLITION

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work included: Demolish and remove from the site those items so indicated on the Drawings, including buildings, building pads, parking and roadway areas, miscellaneous structures, poles, walls, utilities, signs, pipes, valves, appurtenances, etc.
- B. Related work:
 - 1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplemental General Conditions, and Sections in Division 1 of these specifications.

1.2 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- B. Comply with the International Building Code with due regard to the protection of the public and the provision of safeguards during the performance of the work.
- C. Use equipment adequate in size, capacity and numbers to accomplish the work in a timely manner.
- D. Comply with requirements of governmental agencies having jurisdiction.
- E. Contractor is responsible for being aware of and complying with Asbestos NESHAP regulations, as well as other applicable codes, laws and regulations.
 - 1. The Owner is to be notified immediately upon discovery of asbestos materials.

PART 2 - PRODUCTS

- A. No products are required in this Section.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

- A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to the safe, timely, and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.2 DEMOLITION

- A. General:

1. Prior to start of demolition, carefully study the Drawings and these Specifications.
 2. In company with the Owner's representative, visit the site and verify the extent of demolition to be performed under this Contract.
- B. Using only the means and equipment approved for this purpose by the governmental agencies having jurisdiction, demolish and completely remove from the job site the existing construction designated to be removed.
1. Shut off, cap, reroute, and otherwise protect existing public utility lines in accordance with the requirements of the public agency or utility having jurisdiction.
- C. Demolished material shall be considered to be property of the Contractor and shall be completely removed from the job site.
- D. Use means necessary to prevent dust from becoming a nuisance to the public, to neighbors, and to other work being performed on or near the site.
- E. Use any means necessary to protect the public safety during the demolition process.
- F. Use whatever means necessary to protect the adjacent structures from damage during demolition.
- G. Protection of trees: It may become desirable to save certain trees in areas where cut or fill is eighteen inches or less and in parking areas. Consequently, the Contractor shall obtain approval from Engineer prior to removal of significant trees from such areas. The Contractor shall protect existing trees to remain during construction by constructing barricades around such trees as directed.
- H. Erosion control: Construct and maintain erosion control as shown on the Drawings and in accordance with the local County's requirements.

3.3 MEASUREMENT AND PAYMENT

- A. No separate measurement or direct payment will be made for the work under this Section and all costs for same shall be included in the lump sum price bid for the project.

END OF SECTION

SECTION 02516

DISINFECTION OF POTABLE WATER LINES

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work included: Provide disinfection of potable water lines as specified herein, and as needed for a complete and proper installation.
- B. Related work:
 - 1. Documents affecting work of this Section include, but are not necessarily limited to the Special Provisions, General Specifications, and Sections in Division 1 of these specifications.
 - 2. Section 02751 - Plant Piping, Valves, and Appurtenances.

1.2 REFERENCES

- A. American Water Works Association (AWWA):
 - 1. C-651: Disinfecting Water Mains.
 - 2. B-300: Standard for Hypochlorites.

1.3 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- B. All work shall comply with South Carolina Department of Health and Environmental Control (SCDHEC) State Primary Drinking Water Regulations.
- C. All work shall conform to provisions of AWWA C-651 for water line distribution.
 - 1. Do not use Tablet Method or Slug Method therein.

1.4 SUBMITTALS

- A. Comply with pertinent provisions of Section 01340.
- B. Submit chlorination and dechlorination plan to Engineer thirty (30) days before chlorination and dechlorination.
- C. Submit flushing plan to Engineer.

PART 2 - PRODUCTS

2.1 DISINFECTANT

- A. Sodium Hypochlorite complying with AWWA B-300.
- B. Calcium Hypochlorite granules and tablets complying with AWWA B-300. Calcium hypochlorite intended for use in swimming pools is not permitted.

- C. Disinfection with pure chlorine gas is not permitted.
- 2.2 DECHLORINATION (NEUTRALIZING) AGENTS
 - A. Liquid sulfur dioxide or sulfite solution
 - B. Sulfur dioxide gas is not permitted.
- 2.3 TEST KITS
 - A. High Range Test Kit for Chlorine Residual (0 - 200 mg/l): Provide Hach Chemical Company Model CN-21P.
 - B. DPD Chlorine Residual Test Kit (0 - 3.5 mg/l): Provide Hach Chemical Company Model CN-66.
- 2.4 MISCELLANEOUS PARTS AND ACCESSORIES
 - A. Use standard commercial grade suitable for the type of installation or system involved, and conforming to the applicable standards and specifications of the AWWA and approved by the Engineer.

PART 3 - EXECUTION

3.1 GENERAL

- A. Upon completion of testing, disinfect all water lines to meet requirements of AWWA C-651 and the SCDHEC.
 - 1. Utilize the Continuous Feed Method.
- B. Newly laid valves or other appurtenances shall be operated several times while line is filled with chlorinating agent.
- C. Should initial treatment fail to meet results specified, repeat procedures until satisfactory results are obtained, at no additional cost to the Owner.
- D. All pipe taps, feeders, chemicals, etc. for sterilization shall be provided by the Contractor.
- E. Perform hydrostatic testing of water main prior to disinfection.

3.2 DISCHARGE REQUIREMENTS

- A. Discharges to the environment:
 - 1. Discharges shall not cause or have the reasonable potential to cause or contribute to a violation of a SCDHEC water quality standard.
 - 2. Utilize Best Management Practices (BMPs) to prevent erosion from discharge of water during any construction activities including flushing and disinfection.
- B. Notify the Engineer immediately in the event of any accidental discharge.

3.3 PRELIMINARY FLUSHING

- A. Prior to chlorination, fill water main with clear water to eliminate air pockets and flush to remove foreign materials that might have entered the main during installation or repair.
- B. Provide flushing of sufficient magnitude and duration to flush all foreign material out of the lines, valves, and hydrants.
- C. Provide a minimum flushing velocity of 2.5 feet per second (FPS).
- D. All valves and hydrants to be fully opened and closed under water pressure to ensure proper operations during flushing and to dislodge foreign material.
- E. All valves or connections to existing distribution system to be closed and backflow preventer or other approved equipment installed at the source during flushing operations to prevent contamination of existing distribution system.
- F. Provide protection of existing site improvements during flushing operation.
- G. For water mains twenty-four (24) inches and larger, an acceptable alternative to flushing is to broom-sweep the main.
 1. Remove sweepings prior to chlorinating the main.

3.4 DISINFECTION OF WATER MAINS

- A. Provide water supplied from a temporary, backflow-protected connection to the existing distribution system at a constant measured rate into the new water main.
- B. Inject water entering the new main with a chlorine solution fed at a constant rate. Chlorine solution feed rate to provide and maintain a free chlorine concentration of no less than fifty (50) milligrams per liter (mg/L) during the filling of the water main.
 1. Injection point to be no more than ten (10) feet downstream from the beginning of the new water main.
 2. Measure chlorine concentration at regular intervals utilizing high-range chlorine test kits to ensure the minimum chlorine concentration is provided.
 3. Chlorine solutions may be prepared with sodium hypochlorite or calcium hypochlorite. The amount of chlorine required for each one hundred (100) feet of pipe to produce a fifty (50) mg/L concentration is:

Pipe Size (Inches)	100% Chlorine (LB)	1% Chlorine Solution (gal)
4	0.013	0.16
6	0.030	0.37
8	0.054	0.65
10	0.085	1.02
12	0.122	1.47
16	0.218	2.61
24	0.490	5.87
48	1.960	23.50

4. Feed chlorine solution until the entire main is filled with chlorinated water with a minimum concentration of fifty (50) mg/L.

5. Provide a gasoline or electrically powered chemical-feed pump designed for feed chlorine solutions to feed hypochlorite solutions.
 - a. Provide feed lines made of material capable of withstanding the corrosion caused by concentrated chlorine solutions and the maximum pressures that may be caused by the feed pumps.
 - b. Check all connections for tightness before the chlorine solution is applied to the main.
- C. Retain the chlorinated water in the water main for a minimum of twenty-four (24) hours.
 1. Operate valves and hydrants in the treated section of the water main during the twenty-four (24) hours period to ensure disinfection of appurtenances.
- D. At end of the twenty-four (24) hour retention period, all sample locations shall have a residual of not less than ten (10) mg/L of free chlorine.
- E. Final flushing: After the retention period, flush the chlorinated water from the water main, valves, and branches until the chlorine residual is less than 0.5 mg/L.
 1. Provide dechlorination of the chlorinated water in the main by applying a dechlorination agent.

3.5 SAMPLING PROGRAM AND ACCEPTANCE

- A. After final flushing, provide two separate samples for each sample location, taken at twenty-four (24) hour intervals, free of coliform bacteria.
 1. Contractor to take 1st and 2nd samples, deliver to SCDHEC approved laboratory for testing.
 2. The 1st and 2nd sample results shall include the free chlorine residual at the time the samples were collected.
 3. Notify SCDHEC to take a 3rd sample.
- B. At a minimum, sample locations shall be as required by SCDHEC and the following:
 1. The tie-in location of new and existing water lines.
 2. The end of all dead end lines.
 3. At intervals of no more than 1,200' for all new lines longer than 1,200' in length.
- C. All sample locations are to be given an identifying label and a corresponding identification label is to be included on the record drawings indicating each sample location.
- D. Provide all results to the Engineer.
- E. Resampling: If the initial disinfection fails to produce satisfactory bacteriological results or if other water quality is affected, reflush the water main and resample.
- F. Redisinfection: If the check samples fail to produce acceptable results, repeat disinfection procedures until satisfactory results are obtained.

3.6 MEASUREMENT AND PAYMENT

- A. No separate measurement or direct payment will be made for the items under this Section and all costs for same shall be included in the price bid for the project.

END OF SECTION

SECTION 02751

PLANT PIPING, VALVES AND APPURTENANCES

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work included: Provide plant, gravity, pressure, yard and interior piping systems as shown on the Drawings, specified herein, and as needed for a complete and proper installation.
- B. Related work:
 - 1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplemental General Conditions, and Sections in Division 1 of these Specifications.
 - 2. Section 02516 - Disinfection of Potable Water Lines.
 - 3. Section 05990 - Miscellaneous Metals.
 - 4. Section 09900 - Painting.
 - 5. Section 10445 - Piping Identification Systems.

1.2 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- B. All materials in this Section are to be 100% manufactured in the United States.

1.3 SUBMITTALS

- A. Comply with pertinent provisions of Section 01340.
- B. Product data: Within 30 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:
 - 1. Materials list of items proposed to be provided under this Section.
 - 2. Manufacturer's specifications and other data needed to prove compliance with the specified requirements.
- C. Detailed piping layouts to include details and location of pipe supports.
- D. Certified records of manufacturer's pipe tests per Paragraph 2.1B of this Section.

1.4 PRODUCT HANDLING

- A. Comply with pertinent provisions of Section 01640.
- B. Storage of PVC pipe:
 - 1. Store in unit packages as received from manufacturer until just prior to use.
 - 2. Stack units in such manner as to prevent deformation to pipe barrel and bells.
 - 3. PVC pipe shall be protected from direct sunlight by covering with opaque material if storage period will exceed six (6) weeks.

4. Protect from severe impact blows, gouging or cutting by metal surfaces or rocks.

1.5 JOB CONDITIONS

- A. Work under this Section may require construction or work in a confined space.
- B. Provide safety equipment as specified in Section 01500.

PART 2 - PRODUCTS

2.1 PIPE AND FITTINGS

- A. Service requirements:

1. Pipe materials for the various services shall be as indicated on the drawings. If not shown on the drawings, piping 4" and larger shall be ductile iron pipe, including sanitary sewer lines, force mains and water lines unless otherwise indicated below:

Service	Size (Inches)	Buried (B) Exposed (E)	Pipe Material	Pipe Schedule	Lining	Gaskets
Air (compressed)			Stainless Steel			
Air Mains		E	Stainless Steel			
Chlorine Solution	All		PVC	80		
Drain Lines	4" & above		DIP			
Filtered Water			DIP			
Finished Water			DIP			
Fluoride Lines	All		PVC	80		
Lime Solution	All		PVC	80		
Overflow			DIP			
Potable Water	3" & Smaller	B & E	PVC	80		
Pressure Gauge	All		Stainless Steel			

2. Design pressures:

- a. Pipe, regardless of type of material, shall be designed for minimum of 150 psi internal pressure, safety factor of 2 with an additional surge allowance pressure of 100 psi, and for trench loads as indicated on the drawings.

- B. Factory testing:

1. Test each type of pipe material in accordance with the requirements for that particular type of pipe as specified hereinafter.
2. Certified records of the tests made by the manufacturer or by an approved commercial laboratory shall be furnished to the Engineer for each shipment of pipe delivered to the job site.

- C. Lead content:

1. Any pipe, solder, or flux used shall be lead free (lead free is defined as less than 0.2% lead in solder or flux and less than 8.0% lead in pipes and fittings).

D. Ductile iron pipe and fittings (DIP):

1. Provide thickness class pipe with a minimum working pressure as indicated in the design pressures specified and complying with ANSI/AWWA C151/A21.51, ASTM A377, latest revision, minimum Class 52.
2. Clearly mark the class or nominal thickness, net weight without lining, and casting period on each length of pipe. Additionally, cast or stamp the manufacturer's mark, country where cast, year in which the pipe was produced, and the letters "DI" or "Ductile" on the pipe.
3. Buried Piping:
 - a. Provide depth of cover indicated on the drawings.
 - b. Bedding:
 - 1) For gravity sewer lines refer to Part 3.6 Installation of Gravity Sanitary Sewer Pipe for bedding conditions.
 - 2) For other piping use Type 3 bedding conditions, having a wall thickness required for the design pressures specified.
 - c. Provide mechanical or push-on joints complying with ANSI/AWWA C111/A21.11 as modified by ANSI/AWWA C151/A21.51 with rubber gaskets and lubricants complying with ANSI/AWWA C111/A21.11.
 - d. All buried fittings, valves, etc. to be mechanical joint.
 - e. Bolts and nuts:
 - 1) Provide Cor-Ten steel tee head bolts for use on mechanical joints complying with ASTM A242.
 - 2) For connecting to wall pipes, provide Grade B, ASTM A307, hot dipped galvanized, standard carbon steel machine bolts, hex head.
4. Exposed piping:
 - a. Provide Class 53 minimum.
 - b. Provide flanged joints complying with ANSI/AWWA C115/A21.15, latest revision.
 - c. Provide solid type flanges with country where cast stamped or cast into the flange.
 - d. Provide full face, red rubber, factory cut, 1/16" thick gasket for pipe up to 10" diameter and 1/8" thick gasket for larger sizes.
 - e. Bolts and nuts: Provide standard carbon steel machine bolts, hex head.
5. Air piping: Provide Gore-Tex Style R gaskets on flanged fittings and silicone on mechanical joint fittings rated for 400 degrees F.
6. Fittings:
 - a. Provide 250 psi rated ductile iron fittings or specials unless otherwise indicated, complying with ANSI/AWWA C110/A21.10 and in accordance with ANSI/AWWA C111/A21.11.
 - b. Clearly cast the manufacturer's mark, country where cast, year in which the fitting was produced, and the letters "DI" or "Ductile" on the fitting.
7. Companion flanges for fabricated flanged pipe:
 - a. Provide Class 125 ductile iron flanges unless otherwise indicated, complying with ANSI/AWWA C110/A21.10 (latest revision) and in accordance with ANSI/AWWA C111/A21.11.
 - b. Clearly cast the manufacturer's mark, country where cast, pressure rating, size, and the letters "DI" or "Ductile" on each flange.
8. Restrained joint pipe and fittings:
 - a. Provide restrained joint pipe and fittings on all piping at each fitting, including valve connections and on the pipe joints to a distance of 30' each side of fitting for 12" piping and smaller and to a distance of 60' each side of the fitting for piping over 12".

- b. Pipe larger than 12" - Provide one of the following for use with push-on joints:
 - 1) Snap-Lok by Griffin Pipe.
 - 2) American Cast Iron Pipe Company.
 - a) Flex-Ring (4" to 48")
 - b) Lok-Ring (54" to 64")
 - 3) U.S. Pipe.
 - a) TR-Flex (4" to 36")
 - b) HP-Lok (42" to 64")
- c. Pipe 12" and smaller and all fittings:
 - 1) Provide retainer glands for use with mechanical joint pipe and fittings.
 - 2) Provide wedge type.
 - 3) Provide ductile iron gland conforming to ASTM A 536-80. Provide split gland where standard gland cannot be installed.
 - 4) Provide ductile iron set screws, heat-treated to a minimum hardness of 370 BHN with twist-off nuts and permanent standard hex head remaining.
 - 5) Provide for the following rated pressure with minimum 2 to 1 safety factor; 3" - 16" 350 psi, 18" - 48" 250 psi.
 - 6) Provide tee-head bolts conforming to ANSI/AWWA C111/A21.11 latest revision.
 - 7) Provide "MEGALUG" as manufactured by EBAA Iron Sales, Inc. of Eastland, Texas.
- 9. Lining (All pipes and fittings):
 - a. Sanitary sewer, scum, sludge and wastewater service:
 - 1) Provide lining complying with one of the following:
 - a) Amine cured Novalac Epoxy polymeric lining, 40 mils nominal thickness. The standards of quality are based on Protecto 401 by Vulcan Painters, Birmingham, Alabama or Corrosion-Clad Polymer Lining No. 210 by Seauereisen Cements, Pittsburgh, Pennsylvania.
 - b. Water and other services:
 - 1) Provide with standard thickness cement lining complying with ANSI/AWWA C104/A21.4 unless otherwise noted.
 - c. Air service:
 - 1) Bare unlined pipe with a smooth finish.
- 10. Exterior coatings:
 - a. For buried service provide shop applied bituminous coating, 1 mil thick. Do not apply to the first 6" of the spigot end.
 - b. For exposed locations, provide prime coat per Section 09900.

E. Plastic pipe and fittings (PVC):

- 1. Provide pipe with a minimum working pressure as indicated in the design pressures specified and the followings:
- 2. Buried pipe:
 - a. Pipe 14" and larger: Comply with ANSI/AWWA C905.
 - b. Pipe 4" through 12": Comply with ANSI/AWWA C900.
 - c. Pipe 3" and smaller: Comply with ASTM D2241 for PVC 1120, SDR 21, with NSF approval marked at 18" intervals.
 - d. Joints:
 - 1) Provide integral bell or coupling type with elastomeric gaskets.
 - 2) Integral bells to comply with ASTM D2672.
 - 3) Couplings to comply with ANSI/AWWA C900.
 - 4) Gaskets to comply with ASTM F477.

- 5) Lubricants shall be compatible with pipe and gasket materials, shall not support bacteria growth and shall not adversely affect potable quality of line contents.
3. Exposed pipe:
 - a. Provide pipe complying with ASTM D1785 for PVC 1120, Schedule 80, dark gray color, unless otherwise indicated and NSF approved.
 - b. Provide solvent weld coupling joints.
4. Fittings:
 - a. Buried pipe:
 - 1) 4" and larger: Provide ductile iron fittings as specified above.
 - 2) 3" and smaller: Provide PVC fittings, 160 psi at 73°F pressure rating, joint design to conform to pipe joints.
 - b. Exposed pipe:
 - 1) Use schedule 80 PVC fittings with solvent weld joints.
 - 2) Where threaded fittings are indicated, use Schedule 80 conforming to ASTM D2464.
 - 3) Expansion joints: Telescoping type, ASAHI/America or approved equal.
 - 4) Where flanged joints are indicated, provide Type 316 stainless steel bolts, nuts and washers. Provide molybdenum disulfide based anti-seize compound, Molycoat-6 or approved equal.
5. PVC Primer and Solvent Cement:
 - a. Primer:
 - 1) Provide NSF approved low VOC and CPVC primer that meets the requirements of ASTM F-656, SCAQMD Rule 1168/316A.
 - 2) Provide primer that is purple in color and has a specific gravity of 0.858 +/- 0.040.
 - 3) Provide primer with a max. VOC emissions of 550 G/L.
 - 4) Provide IPS Weld-On P-70 primer or equal.
 - b. Solvent Cement:
 - 1) Provide NSF approved CPVC chemical resistant solvent cement that meets the requirements of ASTM F-493 and SCAQMD Rule 1168/316A.
 - 2) Provide solvent cement that is specifically manufactured for chemical resistance to caustics, including hypochlorite solutions.
 - 3) Provide solvent cement that is gray in color and has a specific gravity of 0.982 +/- 0.040.
 - 4) Provide solvent cement with a max. VOC emissions of 490 G/L.
 - 5) Provide IPS Weld-On CPVC 724 chemical resistant solvent cement or equal.
6. Restrained joint pipe and fittings:
 - a. Provide restrained joint pipe where indicated on the plans.
 - b. Provide restraint for all ductile iron fittings as specified above.
 - c. Provide restraint for C900 PVC by mechanical means separate from the mechanical joint gasket sealing gland.
 - 1) Provide wide, supportive contact around full pipe circumference as follows:

<u>Size</u>
4", 6"
8", 10", 12"

<u>Restraint Width</u>
1-1/2"
1-3/4"

- 2) Provide means of restraint by machined serrations on inside surface of restraint device designed to provide circumferential loading over the entire restrainer.
 - a) Design to be such that restraint increases with increased in-line pressure.
 - b) Provide a minimum of 8 serrations per inch of restraint width.
- 3) Restraint device to be pressure rated at 350 psi, or equal to the pipe on which it is used and capable of withstanding test pressures of 2 times pressured rating.
- 4) Provide "MEGALUG" as manufactured by EBAA Iron Sales, Inc. of Eastland, Texas or approved equal.
- 5) Finish fusion applied epoxy coating per AWWA C-213.
- d. Provide restraint for C905 PVC pipe 14" and larger by mechanical means separate from the mechanical joint sealing gland.
 - 1) Restraint device to be a two-piece configuration with a serrated inside surface to provide contact around full pipe circumference.
 - 2) Restraint device body to be manufactured from steel (ASTM A285 Grade C) with fusion epoxy coated surfaces except the serrations.
 - 3) Provide restraint width as follows:

<u>Size</u>	<u>Restraint Width</u>
14", 16", 18"	5"
20", 24"	7"
30"	10"

- 4) Provide 6 serrations per inch of restraint width.
- 5) Comply with AWWA C111, ANSI 21.11.
- 6) Pressure rating to match PVC pipe on which it is used with capability to withstand test pressure of 2 times rated pressure.
- 7) Finish fusion applied epoxy coating per AWWA C-213.
- 8) Provide "MEGALUG" as manufactured by EBAA Iron Sales, Inc. of Eastland, Texas or approved equal.

F. Copper pipe and fittings (CP):

1. Provide minimum Type "K", hard drawn, with wrought copper fittings, soldered.
2. In conduit: Provide minimum Type "K", soft copper with brass flared fittings.

G. Plastic flexible tubing (Tygon tubing):

1. Provide flexible tubing where indicated on the contract drawings.
2. Comply with Federal Specification L-T-7908.
3. Tubing shall be clear in color.
4. Provide NSF approved nylon reinforced tubing where indicated on the plans, for suction applications, and for pressure applications greater than the unreinforced tubing working pressure.
5. Provide nylon fittings with stainless steel hose clamps.

H. Kynar (PVDF) tubing and fittings:

1. Provide Kynar tubing and fittings where indicated on the drawings.
2. Provide natural-color, semi-rigid tubing complying with FDA-USDA-USP Class #4.
3. Provide O.D. sized tubing, unless otherwise indicated.

4. Provide Kynar compression fittings sized as appropriate for tubing outside diameter.

I. Stainless steel pipe and fittings, 2-1/2" diameter and smaller:

1. Provide Schedule 40 pipe for threaded fitting and/or Schedule 10 pipe for pressfit connections.
2. Provide Type 304L.
3. Provide Victaulic Pressfit connections and fittings for Schedule 10 piping.
4. Provide NPT threaded connections and fittings for Schedule 40 piping.
5. Provide stainless steel unions at all connections to fixtures, pumps, equipment, etc.
6. Provide joint compound for thread sealant on threaded connections.
 - a. Provide Lok-Tite PST or approved equal.
 - b. Submit shop drawings for approval.
7. Provide two (2) Pressfit PFT 505 fitting tools with two (2) sets of pressing jaws for all pipe size diameters between 1/2" to 2".

2.2 PLUGS OR CAPS

- A. Provide at all pipe ends and unused branches of fittings.
- B. All plugs and caps shall be tapped 2" and provided with 2" plug.
- C. Provide restrained fittings on ductile iron lines.

2.3 LINK SEAL SLEEVE SEAL

- A. Provide sleeve seals where indicated on the plans to seal between pipe sleeves and piping.
- B. Provide glass reinforced nylon plastic pressure plates.
- C. Provide Type 316 stainless steel bolts and nuts.
- D. Provide EPDM sealing element.
- E. Provide Silicone sealing element for air piping.
- F. Provide square two (2) piece escutcheon plate on exposed side(s) of sleeve(s).
 1. Fabricate from .063" clear anodized aluminum sheet.
 2. Mount with stainless steel sleeve and stainless steel stove bolts.
- G. Acceptable manufacturer is Link Seal, Type S or equal.

2.4 PIPE WALL SLEEVES

- A. Provide ductile iron pipe sleeves at locations shown on the drawings.
- B. Provide pipe sleeves with flanged wall collars located at the center of the overall sleeve length.
- C. Pipe sleeves shall be statically cast with integral wall collars or fabricated from centrifugally cast ductile iron pipe with welded on collars.
- D. Pipe sleeve diameter shall be compatible with the carrier pipe diameter and the specified type of annular space sealing method.

- E. Provide square two (2) piece escutcheon plate on exposed side(s) of sleeve(s).
 - 1. Fabricate from .063" clear anodized aluminum sheet.
 - 2. Mount with stainless steel sleeve and stainless steel stove bolts.

2.5 ADAPTER FLANGES

- A. Provide adapter flanges where indicated on the plans.
- B. Provide high strength ductile iron flange, ASTM A536, Grade 65-45-12.
- C. Provide set screws with a Rockwell hardness of C40-45 converted from Brinnell.
- D. Gasket material:
 - 1. Air lines – Gore-Tex style R rated for 400 degrees for greater.
 - 2. All other lines - BUNA S.
- E. Minimum pressure rating - 150 psi.
- F. Provide adapter flanges with a minimum of a 2 to 1 safety factor.
- G. Provide adapter flanges with MEGA-BOND Restraint Coating System.
 - 1. Wash all adapter flanges and appurtenances in a phosphate wash prior to coating.
 - 2. Coat with a minimum of two coats of liquid Xylan fluoropolymer coating with heat cure to follow each coat.
- H. Provide Series 2100 Megaflange Restrained Flange Adapter by EBAA Iron.

2.6 SERVICE SADDLE

- A. Provide of the following materials:

Body	Type 304 Stainless Steel
Bales and Strips	Type 304 Stainless Steel
Studs	Type 304 Stainless Steel
Hardware	Type 304 Stainless Steel

- B. Provide double-strap for sizes 5" and larger.
- C. Provide Romac 304 and 305 or approved equal.
- D. Connect to pipeline using a 6" stainless steel nipple.
 - 1. Do not use a threaded PVC connection.

2.7 COUPLINGS, BURIED PIPING

- A. Provide couplings where needed to make piping connections and where located on the plans.
- B. Provide cast iron mechanical joint sleeve, full length, minimum 12" long.
- C. Provide ductile iron ASTM A-536 followers.

- D. Provide high strength low alloy steel bolts with heavy semi-finished hexagon nuts to AWWA/ANSI C111/A21.11 standards.
- E. Gaskets to be Grade 30.
- F. Provide Silicone gaskets for air service.
- G. Provide Cor-Ten steel tee head bolts for use on mechanical joints complying with ASTM A242, galvanized in accordance with ASTM A-123.
- H. Provide restrained joints where indicated or specified herein.

2.8 COPPER TRACER WIRE

- A. Provide a continuous 12 gauge blue insulated copper tracer wire when PVC or polyethylene pipe is used.
- B. Approved for direct burial by the manufacturer.
- C. Locate tracer wire a minimum of 6" above top of water main.
- D. Terminate tracer wire at each valve and meter and make provisions to allow for connection of testing apparatus without interfering with the proper operation of valves and meters.
- E. Connect to the water line with duct tape at every bell connection or every 20' to ensure that the wire is directly over the top of the pipe.
- F. Place in the trench with all service lines.
- G. Splice at each service lateral and tee connection with an approved copper compression lug.
- H. Test all tracer wire for conductivity in accordance with Section 3.

2.9 PIPE HANGERS AND SUPPORTS

- A. All pipe hangers and supports must comply with IBC latest revision.
- B. Small piping (smaller than 3"):
 - 1. General:
 - a. Provide Type 316 stainless steel clevis hangers, McMaster Carr 3037T666 or equal, with stainless steel rods and Type 316 stainless steel hardware.
 - b. Provide supports of unistrut channels complying with Section 05990 or FRP channels complying with Section 06800.
 - c. Provide fiberglass loop hangers, McMaster Carr 451 or equal, with stainless steel rods.
- C. Large piping (3" and larger):
 - 1. Hangers:
 - a. General:
 - 1) Provide Type 316 stainless steel Clevis hangers, McMaster Carr 3037T666 or equal, for lines 16" and smaller.

- 2) Provide Grinnell Figure 260 (Figure 300 for insulated lines) or equal hangers with hot dipped galvanized finish for lines 18" and larger.
- 3) Provide stainless steel rods, coupling nuts, inserts and fasteners.
- b. Chemical Feed Building:
 - 1) Fabricate hangers and supports from FRP strut support channels and fittings as specified in Section 06800.
 - 2) Provide uni-cushion insulated fittings for copper, PVC and stainless steel piping.
2. Pipe stands:
 - a. Provide 304 stainless steel Standon Model S92 Saddle Support by Material Resources, Inc. or equal with Schedule 40 Type 304 stainless steel pipe extension and stainless steel floor flange.
 - b. Mount flange to floor with stainless steel expansion anchors.
- D. Riser clamps:
 1. Provide stainless steel riser clamps on vertical pipes through sleeves, McMaster Carr 2989 or equal.
- E. All exposed piping shall be provided with supports and hangers of adequate size and configuration to support the piping system.
- F. Inserts, bolts and anchors shall be set into form work for new concrete. Where hanger and anchors are to be supported by existing structures, wedge anchors shall be installed. Anchors shall be Type 316 stainless steel with stainless steel coupling nuts.
- G. Pressure lines shall be secured with straps or reaction blocking to prevent movement.
- H. Provide at all bends each side of couplings.
- I. The maximum distance between supports or hangers shall not exceed:

	Stainless Steel Tubing, PVC	Copper, Stainless Steel, Steel or Ductile Iron
3/8" diameter and smaller	2-1/2'	4'
1/2" diameter	2-1/2'	6'
3/4" and 1" diameter	3'	8'
1-1/4" to 2" diameter	3-1/2'	10'
2-1/2" diameter to 5" diameter	4'	12'
6" diameter and larger	5'	12'

2.10 PIPE INSULATION

- A. Provide pipe insulation where indicated on the drawings or as specified below.
 1. Insulate all exposed exterior potable water and non-potable water lines 3" or smaller.
- B. Provide pipe insulation where indicated on the drawings.
- C. Provide 2" thick Owens/Corning Fiberglass "25 ASJ/SSL-II".

- D. Provide smooth aluminum jacketing over insulation, Pabco Surefit Metal Products or equal.

2.11 GATE VALVES

A. General:

1. End connections as required for the piping in which they are installed.
2. Suitable for working pressure of not less than 250 psi.
3. Open by turning counter clockwise.
4. Provide stem extensions, if required, to bring operating nut to within two (2') feet of finished grade.
5. Fully coat all internal ferrous metal surfaces with two part thermosetting epoxy.
6. Provide two-part thermosetting epoxy coating on valve exterior.
7. Provide stainless steel bolting.
8. Valves to be manufactured in the United States.

B. Gate valves 1-1/2" and smaller:

1. Where gate valves of this size are indicated on plans, use ball valves.
2. Above ground: use stainless steel ball valves.
3. Below ground:
 - a. Use 1/4 turn all bronze ball valves with stop" suitable for working pressure of not less than 150 psi.
 - b. Provide 2" square operating nut for valves larger than 1" and a shut-off rod for valves 1" and smaller.
 - c. Provide a valve box.
 - d. Provide Ford Series B11 or approved equal.

C. Gate valves 2" and larger:

1. Use resilient seated wedge valves complying with ANSI/AWWA C509.
2. Provide integrally cast bronze stem nut on resilient seated wedge valves.
3. Suitable for working pressure of not less than 250 psi.
4. Design for external stem failure outside of the valve body or bonnet when excessive closing torque is applied with no failure of the pressure retaining parts per AWWA Section 3.2.
 - a. Factory test with no leakage from either side of the disc.
 - b. Test shell to 500 psig.
5. Provide certified to NSF 61.
6. Resilient wedge valves:
 - a. Completely encapsulate resilient iron wedge by an elastomer, without thin spots or voids.
 - b. Provide polymer wedge guide bearing caps bearing surface between the encapsulated wedge and the interior epoxy coating, lowering operation torque and extending service life of the valve.
 - c. The manufacturing plant to have ISO9001 certification.
 - d. Provided Mueller 2360 series.

- D. Buried service: Mechanical joint, restrained, non-rising stem with 2" metal operating nut with arrow indicating direction of opening.

- E. Exposed: Flanged with outside yolk and screw with handwheel operator.

- F. Provide bypass valve where required for pressure and valve size.

G. Valve operator:

1. Provide one T-handle operator for each four (4) buried valves with nut operator.

H. Provide valve boxes and position indicators for all buried service valves and operators.

1. Hermetically sealed for installation in a C.I. valve box.
2. Show valve disc position, direction of rotation and number of turns from full open to full close.
3. Shaft extension and pins to be stainless steel.
4. Base plate and housing to be aluminum.
5. Provide all bronze gearing.
6. Provide 2" AWWA square nut.
7. Locate top of indicator no more than 6" below grade.
8. Approved manufacturer: Valcom or approved equal.

2.12 CHECK VALVES

A. Swing check valves, smaller than 3":

1. Valves smaller than 3" diameter shall be all brass.
2. End connections as required for the piping in which they are installed.
3. Valves shall have swing removable disc.
4. Valves shall be Class 250 working pressure type.
5. Valves to be manufactured in the United States.

D. Ball check valves, 2" and larger:

1. Furnish cast iron bodied valves.
2. Valve ends to be flanged, ANSI 125 lb. standard.
3. Provide hollow steel ball:
 - a. Specific gravity greater than 1.0.
 - b. Provide vulcanized nitrile rubber covering.
4. Provide flanged cap with gasket and stainless steel bolts.
5. Provide rubber seat.
6. Pressure rating - 150 psi.
7. Maximum working temperature - 185°F.
8. Valve to be suitable for buried service.
9. Provide Flygt Type 5087 or approved equal.

E. Ball check valves, smaller than 2":

1. Furnish stainless steel bodied valve.
2. Valve ends to be female NPT.
3. Provide threaded bronze cap.
4. Provide hollow stainless steel ball.
 - a. Specific gravity greater than 1.0.
5. Provide rubber seat.
6. Maximum working pressure - 150 psi.
7. Maximum working temperature - 185°F.
8. Provide Flygt Model HDL Type 2002 or approved equal.

F. PVC and CPVC ball check valves (1/4" to 4"):

1. Provide true union ball check valves where indicated.
2. Provide full port design.

3. Provide Viton O-ring seals and square-cut O-ring seats unless otherwise indicated.
4. Provide Hayward True Union ball check valves or equal.

2.13 PVC AND CPVC BALL VALVES

- A. Provide true union PVC or CPVC ball valves to match pipe material where shown on the plans.
- B. Provide valves with the following features:
 1. Full port design.
 2. Reversible PTFE seats.
 3. Adjustable seat retainer.
 4. Viton double O-ring stem seals unless indicated otherwise.
 - a. Provide EPDM seals on valves with the following service:
 - 1) Ammonia
 - 2) Caustic
 - 3) Potassium Permanganate
 5. Provide stem extension where indicated.
 6. Provide Hayward True Union ball valves or equal.
 7. Valves for hypochlorite service:
 - a. Provide CPVC full port, full flow design.
 - b. Provide upstream vented port.
 - c. Compatible with 15% hypochlorite solution.
 - d. Provide flanged connections with Teflon gaskets.
 - e. Provide "Z-Ball" type Hayward True Union ball valves.
 8. Provide two seat adjustment tools for every ten valves installed.

2.14 STAINLESS STEEL BALL VALVES, 4" AND SMALLER

- A. Provide the following for sizes under 3":
 1. Full port Type 316 stainless steel ball valves where indicated on the plans or otherwise specified herein.
 2. Lever handle operator. T-handle operator where space does not allow use of lever.
 3. Three piece body that is in-line serviceable without removing the valve from the line.
 4. Acceptable manufacturers:
 - a. Series "60" as manufactured by Whitey.
 - b. Apollo Series 86A as manufactured by Conbraco.
 - c. V3P-1000 as manufactured by Velan.
- B. Provide the following for sizes 3" - 4":
 1. Regular port stainless steel ball valves where indicated on the plans or otherwise specified herein.
 2. Oval handle operator.
 3. Top entry design, fully serviceable without removing the valve body from the line.
 4. Seal body cover to body section with fully enclosed spiral wound graphite gasket.
 5. Adjustable two-piece packing gland and pre-compressed solid packing rings.
 6. Acceptable Manufacturers: Series "TE-150/300/600" as manufactured by Velan or approved equal.

- C. Provide quarter turn valves.
- D. Provide with standard locking devices.
- E. Provide with pre-tapped actuator mounting holes.
- F. Provide blowout-proof stem.
- G. Provide stem with RPTFE live load thrust washer.
- H. Support valve seats by a small stainless steel coned disc spring which provides a positive sealing force at high and low pressures.
 - 1. Seats are to automatically compensate for wear and thermal expansion.
- I. Materials of construction:

Body and body cover	316 SS (CF8M)
Ball	316 SS
Stem	316 SS
Seats	PTFE
Stem packing	PTFE
Stem thrust washer and bushing	RPTFE
Body seal	316 SS Graphite
Gland follower	304 SS
Grounding spring	302 SS
Packing Flange	316 SS (CF8M)
All bolts and nuts	B8M Cl.2, 8M, or 304 SS
Handle	304 SS
Handle grip	Vinyl

2.15 SOLENOID VALVES

- A. Provide automatic 2-way normally closed solenoid valve with stainless steel body and internals.
- B. Provide NEMA 4X enclosure.
- C. Provide with a one piece molded DIN connection coil.
- D. Provide Teflon seats, seals and discs.
- E. Provide for minimum operating differential of 0 psi.
- F. Provide ASCO 8210G or approved equal.

2.16 TAPPING SLEEVE AND VALVE

- A. Tapping sleeve:
 - 1. Provide Type 304L stainless steel per ASTM A240.
 - 2. Provide rolled thread stainless steel bolts per ASTM A153, Type 304.
 - 3. Provide Type 304 stainless steel hex head nuts, coated to prevent galling.
 - 4. Virgin SBR gaskets, compounded for water and wastewater service.
 - 5. Provide 3/4" NPT stainless steel test plug.
 - 6. Maximum working pressure of 200 psi.
 - 7. Provide ROMAC Industries Model SST or approved equal.

B. Tapping valve:

1. Construct of material compatible with tapping sleeve.
2. Provide gate valve as specified.
3. Joints - Flange to tapping sleeve, mechanical joint for pipe end.

C. Tie rods:

1. Provide steel rods complying with ASTM Designation A242, galvanized in accordance with ASTM Designation A123.
2. Acceptable products: Super Star Tierod Figure No. SS12 and Tiebolt Figure No. SST7 as manufactured by Star National or approved equal.

2.17 VALVE BOXES

- A. Provide at each buried valve.
- B. Cast iron extension type, suitable for minimum cover of 3'6" over the pipe.
- C. Minimum inside diameter at the top of 5", minimum riser wall thickness 1/4" and thickness at the top of 11/16".
- D. Have the word "WATER"; "SEWER"; "SLUDGE", etc., as applicable, cast into the cover.
- E. Provide Tyler Series 6850.
- F. Where depth requires more than a two piece box use adjustable cast iron extensions.
- G. Coat box and cover with two (2) shop coats of bitumastic paint.

2.18 VALVE BOX PROTECTION RING

- A. Provide at each valve box a precast concrete protection ring.
- B. Provide two rings of No. 3 reinforcing steel, one 14" in diameter, and one 23" in diameter.
- C. Inside dimensions to be 9-1/4".
- D. Outside diameter to be 27".
- E. Provide 5" thickness at interior with a continuous slope to 2" thickness at the outside.
- F. Minimum weight of 110 lbs.

2.19 PRESSURE GAUGES

- A. Provide pressure gauges where indicated on the drawings and not otherwise specified in separate sections of these Specifications.
 1. Provide solid front rounded type, 4 or 4-1/2" stainless steel case with blow-out back, Type 316 stainless steel bourdon tube, glycerin fill, 1/2" NPT bottom male threaded connection, Teflon coated 400 series, stainless steel rotary movement, black micro-adjusted corners and black figures with white plastic dials, and a threaded ring.

2. Provide gauge accurate to within 1/2% of the total scale range.
3. Provide glycerin filled diaphragm isolators on all gauges except for those used on potable water systems.
 - a. Provide diaphragm material resistant to chemicals in the process line being measured.
 - b. Type 316L stainless steel housing and components.
 - c. 1/2" connection.
 - d. Provide fill/bleed connection.
 - e. Viton o-rings with Teflon back-up ring.
4. Select gauge at the range indicated on the drawings or at the nearest standard range which provides a top limit above the pump shutoff head at the operating conditions but no greater than 10% above the shut off head. Gauge units shall be displayed in feet.
5. Each gauge connection to consist of a shutoff valve and 1/2" stainless steel piping connection.
 - a. Shutoff valve to be Type 316 stainless steel ball valve with T-handle operator.
6. Gauge shall be mounted with appropriate 45 degree bends to adequately tilt the gauge so that it can be easily viewed while standing at ground level.
7. Provide a pulsation dampener at the base of the gauge.
8. Provide gauges manufactured by Ametek, Ashcroft, McDaniel or Wika.

2.20 PROPELLER FLOW METER

- A. Provide propeller meter of the location, size, and service shown below for measurement of flow.

LOCATION	SIZE
1. Well Flow	8"
2. Finished Water Flow	6"
3. Backwash Flow	10"

- B. Meter:

1. Provide propeller type, magnetic drive, sealed housing, flanged tube meter for 150 psi working pressure accurate within 2% of true flow within the range indicated in the meter schedule and guaranteed for a period of five years.
2. Provide manufacturer's guarantee for a period of five years.
3. Provide low velocity construction.
4. Comply with AWWA C704-70.

- C. Meter Tube:

1. Provide fabricated steel pipe tube using 150 lb. AWWA Class D flat face steel flanges.
2. Blast internal and external tube to near white metal and coat with 12-15 mils of fusion epoxy coating.
3. Provide constant nominal inside diameter to minimize obstruction of flow.
4. Furnish tube with four straightening vanes.

- D. Meter Head: Connect head to tube with flanged, o-ring sealed connection with stainless steel bolts designed for easy removal of water wetted parts from the tube for inspection or repair without removing the complete tube.

E. Gearbox:

1. Provide bronze gearbox sealed with high grade lubricant.
2. Provide magnetically driven drive with a ceramic sleeve magnetic coupling isolated from the water flow with an o-ring sealed housing.
3. Provide rigid, stainless steel vertical shaft from gear frame to the indicator-totalizer.

F. Propeller:

1. Provide water lubricated ceramic sleeve bearing on a ceramic coated stainless steel spindle mounted parallel to water flow direction.
2. Provide dual ceramic thrust bearings to handle flows in both forward and reverse directions.
3. Ball bearings or other types of sleeve bearings will not be accepted.
4. Provide conical shaped, three bladed propeller, injection molded of thermoplastic material and resistant to normal water corrosion and deformity due to high flow velocities.

G. Indicator-Totalizer:

1. Provide full 4" diameter indicator dial with a range as indicated in the meter schedule.
2. Equip indicator with a six digit, straight reading type totalizer with black numbers on white wheels at least 3/16" high.
3. Provide totalizer with a test hand to check the accuracy of the indicator.
4. Indicator units: gallons per minute (GPM)
5. Totalizer units: gallons (GAL)
6. Provide temperature compensating indicator drive mechanism so the indicator hand is accurate and linear within 1% at all points on the dial when operating within the temperature range of 32-140 deg F.
7. Equip unit with change gears to facilitate easy change of registration without removing pressure from the line or removing the meter head from the meter tube.
8. Protect unit with o-ring sealed bonnet made from injection molded 20% glass filled engineered grade of thermoplastic.
9. Attach bonnet to meter head with screws located under the hinged lid with a padlock hasp.

H. Volumetric Testing:

1. Perform volumetric test meters prior to shipment.
2. Test complete meter head assembly in the same pipe size and same type tube that the meter will be mounted in.
3. Test at minimum, intermediate, and maximum AWWA flow ranges of meter.
4. Prior to shipment, tag meter indicating totalizer reading from testing.
5. Test facility must be certified annually to an accuracy of 0.1% and be traceable to the National Institute of Standards and Technology.

I. Transmitter (option):

1. Output signal: 4-20 mA.
2. Accuracy: + 0.5% full scale maximum.
3. Provide NEMA 4X rated enclosure made from injection molded 20% glass filled engineered grade thermoplastic.
4. Unit shall attach directly to propeller meter head with screws having holes for seal wires and o-ring seal.

J. Digital Indicator (option):

1. Provide unit of solid state construction and feature a combination of flow indication and totalization of flow volume functions contained within the same case.
2. Input signal: 4-20 mA
3. Accuracy: + 0.5% full scale maximum.
4. Provide 24V power supply.
5. Provide self-contained, high impact thermoplastic NEMA 4X enclosure suitable for wall mounting.
6. Provide eight (8) digit, LED alphanumeric display with 0.55" high characters.
 - a. Indicator to read in gallons per minute (GPM).
 - b. Totalizer to read in gallons (GAL).
7. Provide two control preset outputs.
 - a. Provide digital contact type output to remain open at zero flow and close at an adjustable minimum flow rate.

K. Acceptable models:

1. Sparling Instruments, Inc.

2.21 PIGS

- A. Provide all chemical piping systems with methods for launching and capturing pigs.
 1. Provide wye fitting with removable cap and valve between the cap and the main line.
- B. Design pigs for cleaning of PVC and plastic flexible tubing.
- C. Provide one pig of each size. The pigs shall begin at 1/2" increments.
- D. Provide an epoxy coated steel storage box of sufficient size for storage of pigs.

2.22 FLASHING

- A. Where piping passes through roof, flash with a 30" square of 16 oz. copper.
 1. Turn flashing up minimum of 6" and install Wade No. W-8770, Josam or equal flashing sleeve.

2.23 COMPRESSED AIR SYSTEM

- A. Air Compressor
 1. Provide air cooled 1-1/2 Hp simplex, reciprocating oil-less type mounted on a horizontal receiver manufactured by powerex compressors.
 2. Provide compressor capacity of 5.2 or greater ACFM at a discharge pressure of 100 PSIG.
 - a. Design capacity is the actual CFM at inlet conditions delivered at the final discharge of the package.
 3. Complete air compressor package to be assembled and factory tested under full load conditions.
 4. Control compressor start/stop by pressure switch with alternator.
 - a. Controls to provide starting, operating control and safety control of unit.
- B. Drive Motors:

1. Provide 1800 RPM, 3 phase, 60 Hertz, 460V with full voltage motor starter.
 - a. Match motor horsepower to the performance requirements of the compressor.
 - b. Suitable for full voltage starting.
 2. Provide factory mounted NEMA 1 starter applicable for full voltage.
 - a. Wired for 460V single phase.
- C. Drive Assembly:
1. Connect motor to compressor by V-belt with an adjustable, vertical sliding compressor bedplate.
 2. Mount motor and compressor to rigid steel base using elastomer vibration isolators between base and drive assembly enclosure.
- D. Receiver Tank:
1. Provide a 30 gallon ASME coded air receiver rated for MAWP of 200 PSIG.
 2. Equip tank with pressure gauge, regulator, automatic tank drain, vibration isolators and pressure relief valve.
- E. Air Dryer:
1. Provide a two stage, point of use compressed air dryer.
 2. Dryer to remove 99.9% of water.
 3. Provide LA-Man 50 SCFM Series air dryer or approved equal.
- F. Flow Meter
1. Provide a direct reading precision flow meter with an accuracy of +/- 3%.
 2. Provide a brass valve with a range SCFH air of 40-400.
 3. Provide Dwyer Series RMB-5" flow meter or approved equal.
- G. Aerator:
1. Provide a ceramic tube diffuser with a 3/8" control orifice and produces a 2-3 mm bubble at an air flow rate of 3-6 CFM.
 2. All fittings, hardware and gaskets to be stainless steel.
 3. Provide Filtros ceramic tube diffuser or approved equal.

2.24 MISCELLANEOUS PARTS AND ACCESSORIES

- A. Use standard commercial grade suitable for the type of installation or system involved, and conforming to the applicable standards and specifications of the AWWA and approved by the Engineer.

PART 3 - EXECUTION

3.1 HANDLING

- A. Handle pipe accessories so as to ensure delivery to the point of installation in sound, undamaged condition:
 1. Carry pipe into position - do not drag.
 2. Use pinch bars or tongs for aligning or turning the pipe only on the bare end of the pipe.
 3. Use care not to injure pipe linings.

- B. Thoroughly clean interior of pipe and accessories before installation. Keep clean during installation operations by plugging or other method approved by the Engineer.
- C. Before installation, inspect each piece of pipe and each fitting for defects:
 - 1. Material found to be defective before or after installation: Replace with sound material meeting the specified requirements, and without additional cost to the Owner.
- D. Rubber gaskets: Store in a cool dark place until just prior to time of installation.

3.2 PIPE CUTTING

- A. Cut pipe neatly and without damage to the pipe.
- B. Unless otherwise recommended by the pipe manufacturer, and authorized by the Engineer, cut pipe with mechanical cutter only.
 - 1. Use wheel cutters when practicable for ductile iron pipe.
 - 2. Cut plastic pipe square, using handsaw, and remove all burrs.

3.3 LOCATING

- A. Where possible, locate water line at least 10' away, horizontally, from sewer pipes.
- B. Should 10' separation not be practical, then the water main may be located closer provided:
 - 1. It is laid in a separate trench.
 - 2. It is laid in the same trench with the water main located at one side on a bench of undisturbed earth.
 - 3. In either of the above cases, crown elevation of the sewer shall be at least 18" below invert elevation of water line.
- C. Where water lines cross over sewers, maintain 18" minimum clearance between crown of sewer and invert of water line.
- D. Where water lines cross under sewers, each line shall be cast iron or ductile iron.
 - 1. A full length of water line shall be located over the sewer so that joints will be equal distance from the sewer.
- E. No water pipe shall pass through or come in contact with any part of a sewer manhole.
- F. All piping shall be installed in strict accordance with 10 States Standards.

3.4 ALIGNMENT OF PIPE

- A. Pipe lines intended to be straight shall be so laid.
- B. Where vertical or horizontal alignment requires deflection from straight line or grade, such deflection shall not exceed maximum deflection recommended by the pipe manufacturer.

- C. If alignment requires deflection exceeding recommended limits, furnish special bends or a sufficient number of shorter lengths of pipe to provide angular deflections within the allowable limits.

3.5 PLACING AND LAYING

A. General:

1. Comply with pertinent OSHA regulations in regards to excavation of utilities.
2. Comply with requirements of local codes.
3. Excavation and backfilling to comply with pertinent provisions of Section 02221.
4. Lower pipe and accessories into trench by means of derrick, ropes, belt slings, or other equipment approved by the Engineer.
5. Do not dump or drop any of the materials of this Section into the trench.
6. Except where necessary in making connections to other lines, lay pipe with the bells facing in the direction of laying.
7. Rest the full length of each section of pipe solidly on the pipe bed, with recesses excavated to accommodate bells, couplings, and joints.
8. Take up and relay pipe that has the grade or joint disturbed after laying.
9. Do not lay pipe in water, or when trench conditions are unsuitable for the work; keep water out of the trench until jointing is completed.
10. Securely close open ends of pipe, fittings, and valves when work is not in progress.
11. Where any part of coating or lining is damaged, repair to the approval of the Engineer and at no additional cost to the Owner.

B. Ductile iron pipe:

1. Install all pipe, fittings and accessories in accordance with ANSI/AWWA C600.
2. Gaskets: Handle, lubricate where necessary and install in strict accordance with manufacturer's recommendations.

C. Plastic pipe, gasketed joints:

1. Clean gasket, bell or coupling interior, especially groove area.
2. Lubricate and insert gasket as recommended by manufacturer.
3. Align spigot to bell, insert spigot into bell until it contacts gasket uniformly.
4. Push pipe "home" until reference mark is at proper location.

D. Flanged joints:

1. Provide true face flanges, field clean and fit with one full face gasket and make bolts up finger tight.
2. Use torque wrench to alternately tighten bolts 180° apart until full gasket flow and seal are secured.
3. Bias cut or unusual refacing of any flange will not be acceptable.

E. Screw thread joints:

1. Make cuts square, with cuts thoroughly reamed and rough edges and burrs removed.
2. Make threads sound, clean out, and well fitting.
3. Use pipe dope on male fittings only.
4. Make screwed joints tight with all necessary wrenches but without handle extensions.

F. Solvent weld joints:

1. Install solvent weld joints in strict accordance with solvent cement manufacturer's instructions.
2. Make cuts square, remove burrs from pipe ends and bevel slightly if necessary.
3. Visually inspect inside of pipe, couplings and fittings removing all dirt and moisture with clean rag.
4. Apply primer to surface of pipe and socket of fitting if required for cement being used, or lightly sandpaper surfaces.
5. Apply solvent cement evenly and quickly around the outside of the pipe at a width slightly greater than depth of fitting socket.
6. Apply a light coat of cement around the inside of the fitting socket.
7. Quickly insert pipe into fitting socket bottom and give pipe or fitting a 90° turn to evenly distribute the cement, hold in place to prevent fitting rebound.
8. Remove excess cement from pipe and fitting while cement is still soft.
9. Allow joints to cure at least 24 hours before applying pressure to the piping system.

G. Wall pipe:

1. Coat threaded ends of studs with graphite prior to installation.

H. Restrained joints:

1. Install in accordance with manufacturer's instructions.
2. Tighten set screws to the manufacturer's rated torque using a torque wrench. If twist-off nuts are provided, tighten screws until nut breaks loose.

3.6 INSTALLATION OF EXPOSED PIPE

- A. All pipe shall be installed in accordance with details as shown on the Drawings and/or as directed by the Engineer.
- B. Installation and pipe routing details shall be provided by the Contractor.
- C. Pipe shall be run parallel with or at right angles to walls, equipment, ceilings, etc. Forty-five degree (45°) fittings, or angle runs shall be avoided as much as possible and installed only as approved by the Engineer.
- D. Modifications to piping installation based on actual field conditions may be required and shall receive the Engineer's approval. Changes will be provided by the Contractor at no additional cost to the Owner.
- E. Pipe coding shall be provided on all piping exposed to view, including piping in tunnels and floor or wall chases. Comply with Section 10445.

3.7 INSTALLATION OF STAINLESS STEEL PIPE AND FITTINGS

- A. Exercise extreme care to avoid contacting pipe with any ferrous materials.
- B. Use saws, drills, files, brushes, etc. that are specifically designated for use on stainless steel piping only.
- C. Use nylon slings or straps to handle piping.
- D. After installation, wash and rinse all foreign matter from the pipe. Remove manufacturer's identification marking with paint thinner or solvent.

- E. Provide final cleaning with detergent and hot water and rinse clean.
- F. Threaded pipe:
 - 1. Thread cut pipe utilizing dies specifically for stainless steel pipe.
 - 2. Remove all debris and grit and solvent clean cut threads.
 - 3. Apply joint compound to completely fill all voids.
 - 4. Clean excessive joint compound from piping after completing joint.

3.8 LINK SEAL SLEEVE SEAL

- A. Install seal between piping and sleeve.
- B. Tighten bolts to manufacturer's specified torques.
- C. Check for leaks.
- D. Install escutcheon plate at exposed locations.

3.9 ADAPTER FLANGE COUPLING

- A. End of pipe not to exceed 1/4" from mating flange.
- B. Apply "Never-Seize" to stainless steel set screws.
- C. Tighten set screws to manufacturer's recommendations using a torque wrench.

3.10 SETTING VALVE BOXES

- A. Center valve boxes on the valves, setting plumb.
- B. Tamp earth fill around each valve box to a distance of 4' on all sides, or to the undisturbed trench face if less than 4'.
- C. Fully open and close each valve to assure that all parts are in working condition.
- D. Place valve box protection ring around top of valve box as indicated on the plans.
 - 1. Install ring level with top 1" above finished grade.
 - 2. Top of ring to be level with or no more than 1" above the top of the valve box.
- E. Provide valve extension necessary to provide the operating nut within 2' of the top of the valve box.

3.11 TRACER WIRE TESTING

- A. General:
 - 1. Utilize an approved magnetic locating device, M Scope or Equal.
 - 2. Connect a cable conductively from the transmitter to a metal ground rod and to the tracer wire.
 - 3. Locate the line following the instructions of the magnetic locating device.
 - 4. If interference is encountered from adjacent utilities or if the depth of bury or line length interferes with the signal, install a dummy valve box with access to the tracer wire at no additional cost to the owner.
 - 5. Where there is a break in the tracer wire, repair with 3M DBY or ILSCO #IK-8 repair kit and wrap with poly wrap for cathodic protection.

B. Creek crossing and wetland areas:

1. Send a prescribed frequency with a shore line base signal ejector between 25 and 1024 HZ down a metal medium and read by a receiver.
2. Select a frequency based on the depth and the amount of linear feet of the line.
3. If the tracer wire has a break, reinstall the cable and repeat the conductivity test at no additional cost to the owner.

C. Notify in advance and conduct all testing in the presence of the Engineer.

3.12 PIPE HANGERS AND SUPPORTS

- A. Install in accordance with manufacturer's recommendations using stainless steel anchors.
- B. Install plumb and level.

3.13 HYDROSTATIC TESTING - PRESSURE LINES

A. General:

1. Pressure and leakage testing must be conducted in accordance with AWWA Standards C600 – Installation of Ductile Iron Water Mains and Their Appurtenances.
2. Clean and flush line of air, dirt and foreign material.
3. Do not perform hydrostatic tests until at least five days after installation of concrete thrust blocking.
4. Test pump, pipe connection, pressure gauges, measuring devices and all other necessary appurtenances to conduct tests are to be provided by the Contractor.
5. Install brass corporation cocks at all high points that do not have permanent air vents. Corporation cocks are to be left in place and all costs for providing such cocks are to be borne by the Contractor.
6. Conduct tests on each line or valved section of line.
7. Test pressures to be 150 psi, or 1.5 times the maximum working pressure, whichever is greater, based on the elevation of the lowest point of the section under test and corrected to the elevation of the test gauge.
8. Do not test pipe at pressures exceeding manufacturer's recommendations.
9. The Contractor must provide documentation of the pressure and leakage tests. Documentation must include length of lines, diameter of pipe(s), amount of water required to fill line after test was performed, and amount of allowable leakage.
10. The witness to the hydrostatic testing is to be someone other than the Contractor or the utility installing the lines.

B. Pressure tests:

1. After the pipe is laid, the joints completed, and the trench backfilled, subject the newly laid piping and valved sections of the piping to the test pressure specified in Part A above.
2. Open and close each valve within the section being tested several times during the test period.
3. Replace or remake joints showing leakage.
 - a. Remove cracked pipe, defective pipe, and cracked or defective joints, fittings and valves. Replace with sound material and repeat the test until results are satisfactory.
 - b. Make repair and replacement without additional cost to the Owner.

C. Leakage test:

1. Conduct leakage test after the pressure test has been completed satisfactorily.
2. Duration of each leakage test: At least two hours.
3. During the test, subject water lines to the test pressure specified in Part A above.
4. Leakage is defined as the quantity of water to be supplied into the newly laid pipe, or any valved or approved section thereof, necessary to maintain the specified leakage test pressure after the pipe has been filled with water and the air expelled.
 - a. No piping installation will be accepted until the leakage is less than the number of gallons per hour as determined by the formula(s):

$$L = S \times D \times \sqrt{P} / 148,000; \text{ where}$$

L = allowable leakage in gallons per hour;
S = length of pipe tested in feet;
D = nominal diameter of pipe in inches; and
P = average test pressure psi gauge.

- b. When testing against closed metal-seated valves, an additional leakage per closed valve of 0.0078 gallons per hour per inch of nominal valve size will be allowed.
 - 1) Should any test of pipe disclose leakage greater than that specified above, locate and repair the defective joint or joints until the leakage is within the specified allowance, and at no additional cost to the Owner.
 - 2) Repair all visible leaks regardless of test results.
 - 2) Repair all visible leaks regardless of test results.

3.14 STERILIZATION

- A. Sterilize in accordance with Section 02516 – Disinfection of Potable Water Lines.

3.15 DECHLORINATION OF CHLORINATED STERILIZATION WATER

- A. Dechlorinate in accordance with Section 02516 – Disinfection of Potable Water Lines.

3.16 PAINTING

- A. Paint all exposed piping and hydrants complying with pertinent provisions of Section 09900.

3.17 MEASUREMENT AND PAYMENT

- A. No separate measurement or direct payment will be made for the items under this Section and all costs for same shall be included in the price bid for the project.

END OF SECTION

SECTION 02930

GRASSING

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work included: Provide grassing of the areas specified herein, or as indicated, for a complete and proper installation.
 - 1. Treatment plant site: All areas disturbed by the construction operation
- B. Related work: Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplemental Conditions, and Sections in Division 1 of these Specifications.

1.2 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- B. Seed: Conform to all State laws and to all requirements and regulations of the South Carolina Department of Agriculture.
 - 1. Deliver to site each variety of seed individually packaged and tagged to show name, net weight, origin and lot number.
- C. Fertilizer: Conform to State fertilizer law.

1.3 SUBMITTALS

- A. Comply with pertinent provisions of Section 01340.
- B. Product data: Within 30 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:
 - 1. Complete materials list of items proposed to be provided under this Section.

1.4 PRODUCT HANDLING

- A. Comply with pertinent provisions of Section 01640.
- B. At time of delivery, furnish the Engineer invoices of all materials received in order that application rates may be determined.
- C. Immediately remove from the site materials that do not comply with the specified requirements, and promptly replace with materials meeting the specified requirements.

PART 2 - PRODUCTS

2.1 FERTILIZER

- A. Provide commercial balanced 16-4-12 or 12-4-8 fertilizer delivered to the site in bags labeled with the manufacturer's guaranteed analysis.

2.2 GRASS SEED

- A. Provide grass seed that is:
 - 1. Free from noxious weed seeds, and recleaned.
 - 2. Grade A recent crop seed.
 - 3. Treated with appropriate fungicide at time of mixing.
 - 4. Delivered to the site in sealed containers with dealer's guaranteed analysis.

2.3 LIME

- A. Provide agricultural grade, standard ground limestone conforming to current "Rules, Regulations and Standards of the Fertilizer Board of Control" issued at Clemson University.
- B. Bag tags or delivery slip for bulk loads shall indicate brand or trade name, calcium carbonate equivalent, and other pertinent data to identify the lime.

2.4 WOOD CELLULOSE FIBER

- A. Provide wood chip particles manufactured particularly for discharging uniformly on the ground surface when dispersed by a hydraulic water sprayer.
- B. Material to be heat processed so as to contain no germination or growth inhibiting factors.
- C. It shall be dyed (non-toxic) an appropriate color to facilitate metering.

2.5 STRAW MULCH

- A. Provide straw or hay material.
 - 1. Straw to be stalks of wheat, rye, barley or oats.
 - 2. Hay to be timothy, peavine, alfalfa, or coastal bermuda.
- B. Material to be reasonably dry and reasonably free from mature seed bearing stalks, roots, or bulblets or Johnson Grass, Nutgrass, Wild Onion and other noxious weeds.

2.6 EXCELSIOR FIBER MULCH

- A. To consist of 4" to 6", average length, wood fibers cut from sound, green timber.
- B. Make cut in such a manner as to provide maximum strength of fiber, but at a slight angle to natural grain of the wood.

2.7 EROSION CONTROL BLANKET

- A. Provide on areas as shown on the plans.
- B. Provide Erosion Control Blanket S150, from North American Green, or approved equal.

PART 3 - EXECUTION

3.1 GENERAL

- A. Seed these areas immediately upon completion of grading or construction and clean-up operations.
 - 1. Slopes greater than four horizontal to one vertical.
 - 2. Utility rights-of-way adjacent to stream banks.
- B. Areas ready for planting between August 16 and February 28 shall be planted with a temporary cover of Schedule No. 2. At the acceptable seasons for planting Schedule No. 1, the turf shall be destroyed by reworking the soil, and Schedule No. 1 seeding established as specified herein.
- C. Use Rate A lbs. per 1000 sq. ft. on slopes over 5' horizontal to 1' vertical in height and use Rate B lbs. per 1000 sq. ft. on slopes less than 5' horizontal to 1' vertical.

3.2 SEEDING SCHEDULES

- A. Mixtures of different types of seed for the various schedules shall be weighed and mixed in proper proportions in the presence of the Engineer.
- B. Schedule No. 1 - Planting dates March 1 to August 15:

Common Name of Seed	Rate A	Rate B
Rye Grain	1	1
Common Bermuda (hulled)	0	1.5
Sericea Lespedeza (clay soils)	1	0
Weeping Love Grass (sandy soils)	1	0
Centipede	0.5	0.5

- C. Schedule No. 2 - Planting dates August 16 - February 28:

Common Name of Seed	Rate A	Rate B
Rye Grain	0	1
Common Bermuda (hulled)	0	1.5
Brown Top Millet	5	0
Common Bermuda (unhulled)	0	2.0

3.3 GROUND PREPARATION

- A. Bring all areas to proper line, grade and cross section indicated on the plans.
- B. Repair erosion damage prior to commencing seeding operations.
- C. Loosen seed bed to minimum depth of 3".
- D. Remove all roots, clods, stones larger than 1" in any dimension, and other debris.
- E. Conduct soil test to determine pH factor.
 - 1. If pH is not in the range of 6.0 to 6.5, adjust.

3.4 APPLICATION OF FERTILIZER

- A. Spread uniformly over areas to be seeded at:
 - 1. Rate of 18 lbs. per 1000 sq. ft. when using 16-4-12.
 - 2. Rate of 25 lbs. per 1000 sq. ft. when using 12-4-8.
 - 3. Use approved mechanical spreaders.
- B. Mix with soil to depth of approximately 3".

3.5 SOWING METHODS

- A. General:
 - 1. Perform seeding during the periods and at the rates specified in the seeding schedules.
 - 2. Do not conduct seeding work when ground is frozen or excessively wet.
 - 3. Produce satisfactory stand of grass regardless of period of the year the Work is performed.
- B. Seeding, slopes less than four horizontal to one vertical:
 - 1. Shall conform to Methods EA, WF or WCF as specified hereinafter.
 - 2. Method EA (Emulsified Asphalt):
 - a. Sow seed not more than 24 hours after application of fertilizer.
 - b. Use mechanical seed drills on accessible areas, rotary hand seeders, power sprayers, etc. may be used on steep slopes or areas not accessible to seed drills.
 - c. Cover seed and lightly compact with cultipacker if seed drill does not.
 - d. Within 24 hours following compaction of seeded areas, uniformly apply 0.2 gallons per square yard of emulsified asphalt over the seeded area.
 - 3. Method WF:
 - a. Sow seed as specified for Method EA.
 - b. Within 24 hours following covering of seeds, uniformly apply excelsior fiber at the rate of 100 lbs. per 1000 sq. ft.
 - c. Apply material hydraulically.
 - d. Seeded areas to be lightly rolled to form a tight mat of the excelsior fibers.
 - 4. Method WCF:
 - a. Apply seed, fertilizer and wood fiber mulch using hydraulic equipment.
 - b. Equipment to have built-in agitation system with capacity to agitate, suspend and homogeneously mix a slurry of the specified amount of fiber, fertilizer, seed and water.
 - c. Minimum capacity of slurry tank: 1000 gallons.
 - d. Apply fiber mulch at rate of 35 lbs. per 1000 sq. ft.
 - e. Regulate slurry mixture so that amounts and rates of application will result in uniform application of all materials at not less than the specified amounts.
 - f. Apply slurry in a sweeping motion, in an arched stream, so as to fall like rain, allowing the wood fibers to build upon each other.
 - g. Use color of wood pulp as guide, spraying the prepared seed bed until a uniform visible coat is obtained.
- C. Seeding, slopes greater than four horizontal to one vertical:
 - 1. Sow seed as specified for Method EA, unmulched.
 - 2. Cover seeded area with erosion control blanket.

3.6 SECOND APPLICATION OF FERTILIZER

- A. When plants are established and showing satisfactory growth, apply nitrogen at the rate of 1.0 lb. per 1000 sq. ft.
- B. Apply in dry form unless otherwise directed by the Engineer.
- C. Do not apply to stands of temporary grasses.

3.7 MAINTENANCE

- A. Maintain all seeded areas in satisfactory condition until final acceptance of the Work.
- B. Areas not showing satisfactory evidence of germination within six weeks of the seeding date shall be immediately reseeded, fertilized and/or mulched.
- C. Repair any eroded areas.
- D. Mow as necessary to maintain healthy growth rate until final acceptance of the Work.

3.8 ACCEPTANCE

- A. Permanently seeded areas (Schedule No. 1) will be accepted when the grass attains a height of 2".
- B. No acceptance will be made of temporary seeded areas (Schedule No. 2). Rework and seed with Schedule No. 1.

3.9 MEASUREMENT AND PAYMENT

- A. No measurement and payment will be made for the work under this Section and all costs for same shall be included in the price bid for the item to which it pertains.

END OF SECTION

SECTION 05990
MISCELLANEOUS METALS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work included: Provide all miscellaneous metal work as indicated, specified or as needed to provide a complete and proper installation.
- B. Related work:
 - 1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
 - 2. Section 09900 - Painting

1.2 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- B. All materials in this Section are to be manufactured in the United States.

1.3 SUBMITTALS

- A. Comply with pertinent provisions of Section 01340.
- B. Product data: Within 30 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:
 - 1. Materials list of items proposed to be provided under this Section.
 - 2. Manufacturer's specifications and other data needed to prove compliance with the specified requirements.
- C. Shop drawings shall show size of components, materials of construction, connection to other components and anchorage.
- E. Samples shall be submitted at the Engineer's request.

1.4 PRODUCT HANDLING

- A. Comply with pertinent provisions of Section 01640.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Finished and machined faces shall be true to line and level.
- B. Welding shall conform to applicable requirements of:
 - 1. Steel products: American Welding Society Standard D1.0-63.

2. Aluminum alloy products: Recommended practices as published in "Welding Aluminum" by the American Welding Society.

C. Unless otherwise specified, materials shall conform to the following:

Structural Steel	ASTM A 36
Welded and Seamless Steel Pipe	ASTM A 53
Gray Iron Castings	ASTM A 48, Class 30
Galvanizing, General	ASTM A 123
Galvanizing, Hardware	ASTM A 153
Galvanizing, Assemblies	ASTM A 386
Aluminum (Extruded Shapes)	6063 T5 (Alum alloy)
Aluminum (Extruded Pipe)	6063 T6 (Alum alloy)
Aluminum Bars and Shapes (Structural)	6061 T6 (Alum alloy)
Bolts and Nuts	ASTM A 307
Stainless Steel Bolts, Fasteners	AISI Type 304
Stainless Steel Plate and Sheet, Wire	AISI Type 316
Welding Rods for Steel	AWS Spec for Arc Welding

D. Workmanship and finish shall be equal to the best practices of modern shops for the respective work.

1. Exposed surfaces shall have smooth finish and sharp, well defined lines and arises.
2. Sections shall be well formed to shape and size with sharp lines and angles.
3. Curved work shall be sprung evenly to curves.
4. Metal work shall be countersunk properly to receive hardware and provided with the proper bevels and clearance.
5. Cutting shall be done by shearing, sawing or flame cutting; if flame cut, the metal shall be ground back to smooth sound material.
6. Holes for bolts and screws shall be drilled.
7. Conceal fastenings where practicable.

2.2 STEEL AND IRON SHAPES

A. Provide standard, well finished, structural shapes or commercial grade bar stock.

1. Structural steel shall conform to ASTM A 36.
2. Rolled shapes shall conform to dimensions and weights of Regular Series Shapes of AISC.

B. Pipe shall be Schedule 40, unless otherwise indicated.

2.3 ALUMINUM SHAPES

A. Provide extruded shapes of 6063-T5 alloy unless another alloy is better suited for the intended purpose.

B. Furnish structural shapes conforming to dimensions and weights of the Standard Structural Shapes of the Aluminum Association of 6061-T6.

2.4 ANCHOR BOLTS AND MISCELLANEOUS FASTENINGS

A. General:

1. Provide as indicated, or as necessary for securing work in place, and anchoring equipment in place.

2. Sizes and spacing of anchor bolts not indicated shall be as required for the intended purpose.
- B. Provide anchor bolts, expansion anchors, epoxy adhesive anchors, nuts, washers and other fasteners of the materials indicated below unless otherwise specified or indicated on the drawings.
1. Fastening structural steel shapes and plates to each other - ASTM A 325 bolts.
 2. Anchoring structural steel to concrete - ASTM A 307 anchor bolts, galvanized.
 3. Fastening or anchoring stainless steel or aluminum to any material - Type 316 stainless steel.
 4. Anchoring process or mechanical equipment regardless of material to concrete - Type 316 stainless steel.
 5. Anchoring or fastening any materials that will be submerged in water or wastewater - Type 316 stainless steel.
 6. Any anchors or fasteners in contact with potable water - Type 316 stainless steel.
 7. Fastening or anchoring wood or timber - Type 316 stainless steel.
 8. Other fasteners and anchor bolts not otherwise specified - Type 316 stainless steel.
 9. In contact with chlorine solution - Type 2205 duplex stainless steel.
- C. Expansion anchors:
1. Use stud type with one-piece wrap around expansion sleeve.
 2. Provide complete unit manufactured from 316 series stainless steel.
 3. Acceptable products: Phillips "Wedge-Anchors", Ramset "Trubolt Stud Anchors"; or Hilti "Kwik-Bolt".
 4. Do not use expansion anchors in masonry.
- D. Epoxy adhesive anchors:
1. Provide injected epoxy adhesive anchors, consisting of screen tube and anchor rod.
 2. Anchor rod and nut to be Series 316 stainless steel.
 3. Acceptable products: Hilti "HIT" or equal.
 4. Use in masonry and where otherwise indicated.

2.5 INSERTS AND SLEEVES

- A. Provide as required and needed for support of piping, equipment and apparatus, or where passages through walls, floors, etc. are required.
- B. Size and material shall be as indicated, or as approved by the Engineer.

2.6 UNISTRUT CHANNELS

- A. Channels shall be accurately and carefully extruded to size from aluminum, except as noted otherwise.
- B. Channels embedded in concrete shall be Type 304 stainless steel.
- C. Provide a continuous slot with inturned clamping ridges on one side of channel.
- D. Fittings to be stainless steel or aluminum.

- E. Unless otherwise indicated on the drawings, channels to be 1-5/8" x 1-5/8" x .105" thick.
- F. Make all cuts square and free from burrs.
- G. Provide end caps on channels.
- H. Nuts, pipe hangers, clamps, etc. shall be units specifically intended and manufactured for use with "Unistrut" channels.
- I. All nuts, bolts and clamps shall be stainless steel.
- J. Provide flexible elastomer material, "Uni-cushion" or equal, between all pipe clamps or hangers and PVC, copper or stainless steel pipe.

2.7 SHOP PAINTING

- A. Clean and prime all ferrous metal surfaces with primer compatible with finish coats specified in Section 09900.

PART 3 - EXECUTION

3.1 GENERAL

- A. Install all items, plumb, square and level as intended.

3.2 MASONRY ANCHORS

- A. Drill hole in accordance with manufacturer's guidelines.
- B. Inject epoxy using manufacturer's approved injection equipment.
- C. Allow three hours cure time before putting a load on the anchors.
- D. Do not install if temperature is to be below 41°F during time required for cure.
- E. Apply "Never-Seize" to bolts and tighten nuts to manufacturer's recommendations using a torque wrench.
- F. Maximum protrusion of bolt from top of nut - 3/8".

3.3 ANCHOR BOLTS

- A. Drill holes to depth recommended by manufacturer.
- B. Apply "Never-Seize" to bolts.
- C. Tighten nuts to manufacturer's recommendations using a torque wrench.
- D. Maximum protrusion of bolt from top of nut - 3/8".

3.4 UNISTRUT CHANNELS

- A. Mount on wall or floor using stainless steel expansion or masonry anchors or embed in concrete where indicated.
- B. Install channels level and plumb.
- C. Install end caps.

- D. Attach securely to support structure with stainless steel wedge anchors.

3.5 REPAIR OF HOT-DIPPED GALVANIZED SURFACES

- A. Comply with ASTM A 780.
- B. Repair using sprayed zinc coating, minimum dried film of 95% zinc by weight.
- C. Clean, dry and remove oil, grease, and corrosion products from surfaces.
- D. If the area to be reconditioned includes welds, first remove all flux residues and weld spatter by mechanical means, that is, chipping, etc.
- E. Wire brush clean the surface to be reconditioned in accordance with SSPC-SP3.
- F. Extend surface preparation into the surrounding undamaged galvanized coating.
- G. Apply the sprayed coating as soon as possible after surface preparation and before visible deterioration of the surface has occurred.
- H. Provide the surface of the sprayed coating with uniform texture, free of lumps, coarse areas, and loosely adherent particles.
- I. Provide dry mill thickness of 1 mil greater than specified for the hot-dipped galvanized material.
- J. Take thickness measurements with either a magnetic or electromagnetic gage to ensure that the applied coating is as specified.

3.6 MEASUREMENT AND PAYMENT

- A. No separate measurement or direct payment will be made for work under this Section, and the cost of same shall be included in the price bid for the item to which it pertains.

END OF SECTION

SECTION 06800
FRP CHANNEL FRAMING SYSTEM

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work included: Provide fiberglass reinforced plastic (FRP) channel framing system as indicated on the plans and as specified herein.

1.2 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- B. Referenced manufacturer is Aickinstrut, Inc. of Philadelphia, Pennsylvania, and is named to establish standards of quality. Products by other manufacturers meeting these specifications may be provided upon approval of the Engineer.

1.3 SUBMITTALS

- A. Comply with pertinent provisions of Section 01340.
- B. Product data: Within 30 days after the Contractor has received the Owner's Notice to Proceed, submit:
 - 1. Manufacturer's specifications and other data needed to prove compliance with the specified requirements.

1.4 PRODUCT HANDLING

- A. Comply with pertinent provisions of Section 01640.

PART 2 - MATERIALS

2.1 CHANNEL FRAMING

- A. Manufacture by the pultrusion process to provide the proper balance of longitudinal and transverse strength as well as a high overall strength listed.
- B. Manufacture from premium grade vinyl ester at least equal to Kopper's 9300 MPQ.
- C. Provide a nexus polyester surfacing veil over 100% of the surface that, along with a properly designed filler system, will protect against degradation from ultraviolet light.
- D. Channels shall provide a minimum pull out strength of 1,000 lbs. when the load is applied to the head grooves over a section of the channel 3/8" long.
- E. Provide 1-5/8" x 1-5/8" x 1/4" standard channel, Aickinstrut 2000 series.
- F. All fiberglass reinforced plastic (FRP) products covered under this specification shall have a flame spread rating of 25 or less when tested per ASTM E 84, and, therefore, shall be Class 1 material in the Uniform Building Code.

- G. Provide manufacturer's standard PVC end caps on all channels that are to be enclosed.

2.2 RIGID PIPE CLAMPS

- A. Provide rigid pipe clamps with full interlocking contact with interior channel flanges.
 - 1. Provide non-metallic and non-conductive.
 - 2. Provide adjustable clamps to accommodate a minimum 3/4" variance in piping or conduit o.d. sizes.
- B. Construction by the injection molding process using polyurethane resin suitably compounded for corrosion service.
- C. Pipe clamps to be provided and produced by the same manufacturer as the channel framing.

2.3 FASTENERS

- A. Provide vinyl ester fiberglass nuts and bolts and polyurethane thermoplastics channel nuts for all channel framing connections
- B. Provide 1/2" channel nuts.

PART 3 - EXECUTION

3.1 GENERAL

- A. Mount strut using Type 316 stainless steel hardware.

3.2 SEALING CUTS

- A. Seal all cuts, abrasions and drilled holes.
- B. Clean thoroughly.
- C. Apply Aickinseal or equivalent that has a rapid 5-minute drying time.
- D. Allow to dry before using.

3.3 MEASUREMENT AND PAYMENT

- A. No separate measurement or direct payment will be made for work under this Section and all costs of same shall be included in the price bid for the project.

END OF SECTION

SECTION 09870

REPAINT EXISTING PRESSURE VESSEL

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work included: Repair, prepare, clean, paint and finish the interior surfaces of the pressure filter tanks being rehabilitated.
- B. Related work:
 - 1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
 - 2. Priming or priming and finishing of certain surfaces may be specified to be factory performed or installer performed under pertinent other Sections.
- C. Definitions: "Paint", as used herein, means coating systems materials including primers, emulsions, epoxy, enamels, sealers, fillers and other applied materials whether used as prime, intermediate or finish coats.

1.2 QUALITY ASSURANCE

- A. Referenced manufacturer is the Tnemec Company, Inc. of North Kansas City, Missouri and is named to establish standards of quality. Equal products of other manufacturers may be provided for the project upon approval by the Engineer.
- B. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- C. Paint coordination:
 - 1. Provide finish coats which are compatible with the prime coats actually used.
 - 2. Review other Sections of these Specifications as required, verifying the prime coats to be used and assuring compatibility of the total coating system for the various substrata.
 - 3. Upon request, furnish information on the characteristics of the specific finish materials to assure that compatible prime coats are used.
 - 4. Provide barrier coats over noncompatible primers, or remove the primer and reprime as required.
 - 5. Notify the Engineer in writing of anticipated problems in using the specified coating systems over prime coatings supplied under other Sections.
- D. Subcontractor qualifications:
 - 1. Paint subcontractor to have a minimum of three years practical experience and successful history in the application of specified products to surfaces of water treatment plants.
 - 2. Furnish a list of references and job completions.

3. Paint subcontractor to provide certification from the paint supplier to his knowledge and experience in applying the specified coatings.
4. Paint subcontractor shall provide a site mock up of the coating systems for the masonry walls, concrete floors, and concrete launders for approval by the engineer before any work is started. The approved mock ups shall be the quality standard for the project.

E. Technical services:

1. The coatings manufacturer shall provide a NACE certified manufacturer's representative to visit the work to verify compliance with these specifications, to assure coatings are properly applied, and the proper equipment is being used.
2. Provide for a minimum of one (1) interim site visits between initiation and completion of painting or as needed.
3. Provide a NACE certified manufacturer's representative at completion of painting to verify painting was installed according to specifications.
 - a. Provide Holliday mils thickness testing of all metal surfaces.

1.3 SUBMITTALS

- A. Comply with pertinent provisions of Section 01340.
- B. Product data: Within 45 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:
 1. Materials list of items proposed to be provided under this Section.
 2. Manufacturer's specifications and other data needed to prove compliance with the specified requirements.
- C. Subcontractor qualifications.
- D. Color chips: Provide for each type of finish coat required.
- E. Schedule:
 1. Submit schedule listing of all surfaces to be painted, name, generic type, trade or brand name, system for each surface including number of coats and total dry film thickness.
 2. Secure Engineer's approval of schedule, in writing, prior to ordering any materials.

1.4 PRODUCT HANDLING

- A. Comply with pertinent provisions of Section 01640.
- B. Deliver all material to site in original, new, unopened containers, labeled and bearing manufacturer's name and stock number, product and brand name, contents by volume for major constituents, instructions for mixing and reducing, and application instruction.
- C. Provide adequate storage facilities designed exclusively for the purpose of paint storage and mixing.
- D. Facility area shall be located away from open flames, be well ventilated, and be capable of maintaining ambient storage temperature of no less than 45°F.

- E. Paint, coatings, reducing agents, and other solvents must be stored in original containers until opened. If not resealable, then must be transferred to UL approved safety containers.
- F. Provide proper ventilation, personal protection and fire protection for storage and use of same. Comply with requirements set forth by Occupational Safety and Health Act for storage and use of painting materials and equipment.
- G. All waste materials shall be disposed of by the Contractor in accordance with South Carolina Department of Health and Environmental Control (SCDHEC).

1.5 REFERENCES

- A. SSPC - Steel Structures Painting Council
- B. SSPC-SP 1 – Solvent Cleaning.
- C. SSPC-SP 2 – Hand Tool Cleaning.
- D. SSPC-SP 3 – Power Tool Cleaning.
- E. SSPC-SP 6/NACE 3 – Commercial Blast Cleaning.
- F. SSPC-SP 10/NACE 2 – Near-White Metal Blast Cleaning
- G. SSPC-SP 13/NACE 6 – Surface Preparation of Concrete.
- H. SSPC-PA2 Measurement of Dry Coating with Magnetic Gauges.

1.6 EXTRA STOCK

- A. Upon completion of the work of this Section, deliver to the Owner at least one gallon of each color, type, and gloss of paint used in the Work, tightly sealing each container and clearly labeling with contents and location where used.

PART 2 - PRODUCTS

2.1 PAINT MATERIALS

- A. Source of all paint material is subject to approval by the Engineer.
- B. All paint material which will be in contact with potable water shall have the approval of the National Sanitation Foundation (NSF) ANSI/NSF Standard 61 and the South Carolina Department of Health and Environmental Control for such use.
- C. All paint materials to be used in any one system shall be the products of one manufacturer.
- D. Use only the thinners recommended by the paint manufacturer, and use only to the recommended limits.

- E. The contents of all coatings shall be lead-free. Provide manufacturer's letter indicating the coatings to be used are lead-free.

2.2 APPLICATION EQUIPMENT

- A. Use only such equipment as is recommended by the paint manufacturer.

2.3 CAULK

- A. Provide Sikaflex-1a, TNEMEC Series 265 TG or Engineer approved equal for all interior caulking applications.

2.4 OTHER MATERIALS

- A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Engineer.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

- A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.2 ENVIRONMENTAL CONDITIONS

- A. Do not work under unfavorable weather conditions.
 - 1. Air and surface temperatures must be above 45°F, dew point not within 5° of surface temperature, and relative humidity less than 85%.

3.2 SURFACE PREPARATION

- A. General:
 - 1. Prepare and thoroughly clean all surfaces prior to application of paint in a workmanlike manner.
 - 2. Remove or mask items not to be painted.
 - 3. The interior surfaces shall also be cleaned using a high quality industrial vacuum cleaner after all the blasting has been completed and before the intermediate coat is applied.
 - 4. All surface preparations shall conform to the Steel Structures Painting Council Specification as indicated.
 - 5. Perform preparation and cleaning procedures in strict accordance with manufacturer's instructions for each substrate condition.
 - 6. At the end of each sandblasting operation, use high pressure air to clean all areas that have a heavy build-up of sand and debris.
 - 7. Provide necessary protection to protect workers from exposure to lead. At a minimum, comply with applicable South Carolina Department of Health and Environmental Control and OSHA regulations.
 - a. The Contractor must inform all workers of the quantity of lead in the paint to be removed and of the known hazards associated with exposure to the lead dust that will be generated in the work area.
 - b. The Contractor must submit a worker protection plan indicating steps taken to limit worker exposure to lead.

B. Containment and disposal of debris and/or paint chips:

1. The Contractor shall be responsible to make provisions to contain the sandblasting residue and/or old paint to within the tank property. Sandblasting or cleaning operations shall not begin until the containment method is approved by the Engineer. The Contractor shall be responsible for the disposal of the debris generated and shall be responsible for all costs involved in the disposal and testing of the debris on behalf of the Owner. The Contractor shall subcontract the testing, air monitoring, and disposal of generated debris with an environmental service company familiar with the disposal of contaminated debris. Referenced company is Safety-Kleen, Inc. Call 1-800-437-9749 to contact a Customer Service Representative. A comparable company may be used provided the above requirements are met.
2. The Contractor shall be responsible for obtaining the certified laboratory test report and pay the costs necessary to determine if the residue generated during the sandblasting and power tool cleaning operations on the interior of the tank exceeds "leachable" limits for lead, arsenic, barium, cadmium, chromium, mercury, selenium, and silver as determined by EPA's Toxicity Characteristic Leaching Procedure (TCLP). The laboratory must be certified by the State of South Carolina. A copy of the certified report shall be furnished to the Engineer.
3. The Contractor shall sandblast a representative area of the interior of the tank and collect the debris generated. Samples from the interior shall be collected in the presence of the Engineer and sent to a laboratory for analysis. The laboratory must be certified by the State of South Carolina. The Contractor shall furnish the Engineer a certified test report of the Toxicity Characteristic Leaching Procedure (TCLP) results of a representative random sample taken from the debris and paint chips from the interior. Should the result exceed any of the EPA maximum limits, the Contractor shall apply for an EPA identification number for a generator of hazardous waste on notification Form 8700-12. Application and disposal of debris generated shall be through the Solid and Hazardous Waste Assessment Section of the South Carolina Department of Health and Environmental Control. Call (803) 896-4172 or (803) 896-4121 for assistance. Should the results of the certified test be less than the EPA maximum limit the Contractor shall dispose of the debris generated in an approved landfill as directed by the Solid and Hazardous Waste Assessment Section of the South Carolina Department of Health and Environmental Control. Call (803) 896-4172 or (803) 896-4121 for assistance.

C. Interior surface:

1. Clean all areas of the interior of the tank to conform to the requirements for Near White Blast Cleaning, SSPC-SP10, to remove all rust, mill scale, old coating and foreign matter.
2. The Contractor will be required to collect, analyze and dispose of all debris generated during the removal of the existing coating as outlined in Paragraph 3.5.B. above.
3. The sandblasting operation shall be completed before any intermediate coating is applied.
4. All sandblasting debris shall be removed from the tank before any intermediate coating is applied.

3.3 VENTILATION

- A. The contractor must provide forced air ventilation during all coating removal, debris removal, and painting operation performed on the tank.
- B. The ventilation by forced air system must be sufficient to provide adequate visibility and limit worker lead dust exposure. Should worker exposure to lead dust become excessive or visibility drop to an unacceptable level, then reconfiguration of the ventilation system requiring the use of flexible and/or rigid duct work and additional forced air ventilation capacity shall be required.
- C. All ventilation equipment shall be explosion proof.
- D. The exhaust ventilation system will be evaluated by ambient air monitoring. Emissions above a time weighted average of 10 micrograms per cubic meter shall be cause for blasting operation shut down and reevaluation of the exhaust and ventilation system. Modifications to the containment shall be made until compliance is achieved.

3.4 MATERIALS PREPARATION

- A. General:
 - 1. Mix and prepare paint materials in strict accordance with the manufacturer's recommendations as approved by the Engineer.
 - 2. When materials are not in use, store in tightly covered containers.
 - 3. Maintain containers used in storage, mixing, and application of paint in a clean condition, free from foreign materials and residue.
- B. Mixing:
 - 1. Mix materials in strict accordance with the manufacture's data sheet.
 - 2. Do not stir into the material any film which may form on the surface, but remove the film and, if necessary, strain the material before using.

3.5 PAINT APPLICATION

- A. General:
 - 1. All paint shall be applied in accordance with SSPC-PA1, "Shop, Field and Maintenance Painting" standard.
 - 2. An additional interior primer coat shall be applied to all weld seams, weld scars, etc. by brush and/or roller after the initial prime coat has been applied over the entire interior surface.
 - 3. Slightly vary the color of succeeding coats.
 - a. Do not apply additional coats until the completed coat has been inspected and approved.
 - b. Only the inspected and approved coats of paint will be considered in determining the number of coats applied.
 - 4. Surfaces shall be cleaned between coats. During and after the application of all interior coats, all horizontal weld seams shall be cleaned using a stiff or wire brush to remove all dust and overspray. Any paint removed shall be recoated by brush or roller.
 - 5. Record temperature and humidity readings before paint is applied.
- B. Painting: Painters will be expected to routinely verify wet mil thickness as coatings are applied to guarantee respective coating thickness is as specified. Wet mil thickness checks will be the primary thickness check (on

overcoats) for each material and will be the sole responsibility of each painter. Personnel who do not perform this task competently will not be allowed to continue painting.

- C. Drying: Allow sufficient drying time between coats, modifying the period as recommended by the material manufacturer to suit adverse weather conditions.
- D. Brush or roller applications:
 - 1. Brush or roll coats onto the surface in an even film.
 - 2. Cloudiness, spotting, holidays, laps, brush or roller marks, runs, sags, ropiness and other surface imperfections will not be acceptable.
- E. Spray application:
 - 1. Except as specifically otherwise approved by the Engineer, confine spray application to metal framework and similar surfaces where handwork would be inferior.
 - 2. Where spray application is used, apply each coat to provide the hiding equivalent of brush coats.
 - 3. Do not double back with spray equipment to build up film thickness of two coats in one pass.

3.6 INTERIOR PAINTING SYSTEM

A. General:

- 1. After thorough cleaning and clean-up of residue from surface preparation, the tank interior shall be coated.
- 2. All interior areas of the tank shall be sandblasted and primed before the intermediate coat is applied.
- 3. The system shall be a three (3) coat zinc/epoxy system. The weld seams shall receive an additional coat.
- 4. The contents of all interior coatings shall be lead-free.
- 5. All sand and debris generated from the sandblasting operations shall be removed from the tank before the intermediate coat is applied.

B. Prime coat:

- 1. Apply the prime coat immediately to the properly cleaned surfaces.
- 2. Apply by spray, conventional or airless.
- 3. Apply the following prime coat:

Manufacturer	Material	Dry Thickness	Drying Time
Tnemec	Series 91-H20 Hydro-Zinc	3.0 mils	24 hrs.

- 4. Apply the weld seam coat to all weld seams, weld scars, etc. by brush or roller. This coat shall be a separate operation after the application of the prime coat. Drying time shall be as per manufacturer's recommendations.
- 5. All horizontal weld seams shall be cleaned using stiff wire brush to remove all dust and overspray. Any paint removed shall be recoated by roller or brush

C. Stripe coat:

1. Apply stripe coat to all weld seams, weld scars, manways, edges, angles, and other surface irregularities by brush or roller.
2. Must be a separate operation after the application of the prime coat.
3. Drying time will be per manufacturer's recommendations.
4. Clean all horizontal weld seams using stiff wire brush to remove all dust and overspray. Any paint removed shall be recoated by roller or brush.
5. Apply the following stripe coat:
 - a. TNE MEC Series N140 – 15BL Pota-Pox Tank White Finish with 4.0 – 6.0 dry mils thickness

D. Field intermediate coat:

1. Apply the intermediate coat by spray, conventional or airless.
2. Complete all sandblasting before any intermediate coating is applied and remove all sand and debris from the tank before the intermediate coat is applied.
3. Tint the intermediate coat in such a fashion as to facilitate identification and inspection of various coats.
4. Apply a one full intermediate coat to the entire interior of the tank.

Manufacturer	Material	Dry Thickness	Drying Time
Tnemec	Series N140 - 1255 Pota-Pox Beige	4.0-6.0 mils	24 hrs.

- E. Field finish coat: Not less than 24 hours after application of the field intermediate coat, the tank shall receive one full finish coat. The following finish coat shall be applied:

Manufacturer	Material	Dry Thickness	Drying Time
Tnemec	Tnemec - Series N140 – 15BL Pota-Pox Tank White Finish	4.0-6.0 mils	24 hrs.

- F. Flushing of coatings: Upon completion of painting the entire interior of the tank shall be pressure washed to remove all dust and stains. This cleaning shall be completed before the tank is sterilized.

3.7 COATING THICKNESS

A. General:

1. In all cases, the value stated for dry film thicknesses are average, based upon application to a smooth surface.
2. Dry film thickness gauges will be used as the application of each coat proceeds, to check the film thickness as applied.
3. Failure to obtain the proper dry thickness will require the application of additional coats until proper dry thickness is obtained.

3.8 DRYING OF COATINGS

- A. The required thorough drying of all coatings is affected by the various factors of humidity, temperature and quantity of air passing over the coated

surfaces. If necessary, forced ventilation shall be provided to adequately remove solvent vapors from the tank interior.

3.9 FLUSHING OF COATINGS

- A. The coated tank shall be thoroughly flushed with water by the Contractor until the flushing water is free from odor and tastes.

3.10 INDEMNITY

- A. The Contractor must agree to indemnify the Owner from all claims and demands for damages or compensation from injuries to persons or property caused by the negligence of the Contractor in the performance of the work specified herein.

3.11 GUARANTEE

- A. The Contractor must guarantee for one year the paint coating and repairs he furnishes under these specifications, to the extent that he will repair any defects due to faulty workmanship and/or material which may appear in the paint coating and repairs during that period.
- B. The warranty will commence following 90 days of successful completion and start-up of the tank.
- C. Contractor will be notified in writing of beginning and ending dates of the warranty period.
- D. At the end of the year, the Engineer will make a list of any defects and/or deficiencies with the tanks painted under these specifications. The Contractor will be responsible for correcting any defects and/or deficiencies within 30 days of written notice from the Engineer.

3.12 CLEAN UP

- A. Upon completion of the work, the Contractor will remove or dispose of all rubbish and other unsightly material caused by his operation, and will leave the premises in as good a condition as he found them.

3.13 OBSERVATION AND ACCEPTANCE

- A. Examination of overall appearance and measurement of dry film thickness.
- B. Correct defects and/or deficiencies to satisfaction of the Engineer.
- C. Observation by the Engineer will be required at the following intervals:
 - 1. At the end of each surface cleaning operation before paint is applied.
 - 2. After each coat of paint is applied.
 - 3. The Contractor shall be responsible to contact and coordinate the time of each observation with the Engineer.
 - 4. Provide a minimum 36 hour notice for observations.
 - a. Observations can be scheduled Monday – Friday (excluding holidays) between 8:00AM and 5:00PM.
 - b. No observations will be scheduled on weekends. If the Contractor is working weekends and an observation is required, the Contractor will have to wait until Monday at the earliest to receive an observation and be able to proceed with the work.

5. If the contractor proceeds without approval from the Engineer, the work will have to be redone before payment is approved.

D. Secure approval for sterilization of tank.

3.14 MEASUREMENT AND PAYMENT

- A. No separate measurement or direct payment will be made for work under this Section, and the cost of same shall be included in the price bid for the item to which it pertains.

END OF SECTION

SECTION 09900

PAINTING

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work included: Prepare, paint and finish the exterior and interior surfaces indicated or specified, and as needed for a complete and proper installation.
 - 1. Paint existing surfaces as indicated on the drawings.
 - 2. Paint all newly provided surfaces unless specially excluded.
- B. Work not included: Unless otherwise indicated, painting of following surfaces will not be required.
 - 1. Concealed areas and inaccessible areas such as furred spaces, foundation spaces, utility tunnels, pipe spaces, and duct shafts.
 - 2. Metal surfaces of anodized aluminum, stainless steel, chromium plate, copper (except piping), bronze and similar non-ferrous materials.
 - 3. Moving parts of operating units, mechanical or electrical parts such as valve operators, linkages, sensing devices, and motor shafts.
 - 4. Exterior concrete surfaces, including interior walls of treatment tanks.
 - 5. PVC piping systems.
 - 6. Instruments, control panels, chlorinators, etc. having factory applied finishes.
 - 7. Roof and wall panels of pre-engineered buildings.
 - 8. Do not paint over required labels or equipment identification, performance rating, name, or nomenclature plates.
- C. Related work:
 - 1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
 - 2. Priming or priming and finishing of certain surfaces may be specified to be factory performed or installer performed under pertinent other Sections.
- D. Definitions: "Paint", as used herein, means coating systems materials including primers, emulsions, epoxy, enamels, sealers, fillers and other applied materials whether used as prime, intermediate or finish coats.

1.2 QUALITY ASSURANCE

- A. Referenced manufacturer is the Tnemec Company, Inc., and is named to establish standards of quality. Equal products of other manufacturers may be provided for the project as outlined on the bid form.
- B. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- C. Paint coordination:
 - 1. Provide finish coats which are compatible with the prime coats actually used.
 - 2. Review other Sections of these Specifications as required, verifying the prime coats to be used and assuring compatibility of the total coating system for the various substrata.

3. Upon request, furnish information on the characteristics of the specific finish materials to assure that compatible prime coats are used.
4. Provide barrier coats over noncompatible primers, or remove the primer and reprime as required.
5. Notify the Engineer in writing of anticipated problems in using the specified coating systems over prime coatings supplied under other Sections.

D. Subcontractor qualifications:

1. Paint subcontractor to have a minimum of three years practical experience and successful history in the application of specified products to surfaces of water treatment plants.
2. Furnish a list of references and job completions.
3. Paint subcontractor to provide certification from the paint supplier to his knowledge and experience in applying the specified coatings.
4. Paint subcontractor shall provide a site mock up of the coating systems for the masonry walls, concrete floors, and concrete launders for approval by the engineer before any work is started. The approved mock ups shall be the quality standard for the project.

E. Technical services:

1. The coatings manufacturer shall provide a NACE certified manufacturer's representative to visit the work to verify compliance with these specifications, to assure coatings are properly applied, and the proper equipment is being used.
2. Provide for a minimum of two (2) interim site visits between initiation and completion of painting or as needed.
3. Provide a NACE certified manufacturer's representative at completion of painting to verify painting was installed according to specifications.
 - a. Provide Holliday mills thickness testing of all metal surfaces.

1.3 SUBMITTALS

- A. Comply with pertinent provisions of Section 01340.
- B. Product data: Within 15 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:
 1. Materials list of items proposed to be provided under this Section.
 2. Manufacturer's specifications and other data needed to prove compliance with the specified requirements.
- C. Subcontractor qualifications.
- D. Color chips: Provide for each type of finish coat required.
- E. Schedule:
 1. Submit schedule listing of all surfaces to be painted, name, generic type, trade or brand name, system for each surface including number of coats and total dry film thickness.
 2. Secure Engineer's approval of schedule, in writing, prior to ordering any materials.

1.4 PRODUCT HANDLING

- A. Comply with pertinent provisions of Section 01640.

- B. Deliver all material to site in original, new, unopened containers, labeled and bearing manufacturer's name and stock number, product and brand name, contents by volume for major constituents, instructions for mixing and reducing, and application instruction.
- C. Provide adequate storage facilities designed exclusively for the purpose of paint storage and mixing.
- D. Facility area shall be located away from open flames, be well ventilated, and be capable of maintaining ambient storage temperature of no less than 45°F.
- E. Paint, coatings, reducing agents, and other solvents must be stored in original containers until opened. If not resealable, then must be transferred to UL approved safety containers.
- F. Provide proper ventilation, personal protection and fire protection for storage and use of same. Comply with requirements set forth by Occupational Safety and Health Act for storage and use of painting materials and equipment.
- G. All waste materials shall be disposed of by the Contractor in accordance with South Carolina Department of Health and Environmental Control (SCDHEC).

1.5 REFERENCES

- A. SSPC - Steel Structures Painting Council
- B. SSPC-SP 1 – Solvent Cleaning.
- C. SSPC-SP 2 – Hand Tool Cleaning.
- D. SSPC-SP 3 – Power Tool Cleaning.
- E. SSPC-SP 6/NACE 3 – Commercial Blast Cleaning.
- F. SSPC-SP 10/NACE 2 – Near-White Metal Blast Cleaning
- G. SSPC-SP 13/NACE 6 – Surface Preparation of Concrete.
- H. SSPC-PA2 Measurement of Dry Coating with Magnetic Gauges.

1.6 EXTRA STOCK

- A. Upon completion of the work of this Section, deliver to the Owner at least one gallon of each color, type, and gloss of paint used in the Work, tightly sealing each container and clearly labeling with contents and location where used.

PART 2 - PRODUCTS

2.1 PAINT MATERIALS

- A. Source of all paint material is subject to approval by the Engineer.
- B. All paint material that will be in contact with potable water shall have the approval of the South Carolina Department of Health and Environmental Control for such use.

- C. All paint materials to be used in any one system shall be the products of one manufacturer.
- D. Where products are proposed other than those specified by name and number in the Painting schedule, provide under the product data submittal required by Article 1.3 of this Section a new painting schedule compiled in the same format used for the Painting Schedule included in this Section.
- E. Use only the thinners recommended by the paint manufacturer, and use only to the recommended limits.

2.2 COLOR SCHEDULE

- A. The Engineer will prepare a color schedule for guidance in the painting.

2.3 APPLICATION EQUIPMENT

- A. Use only such equipment as is recommended by the paint manufacturer.

2.4 OTHER MATERIALS

- A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Engineer.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

- A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.2 ENVIRONMENTAL CONDITIONS

- A. Do not work under unfavorable weather conditions.
 - 1. Air and surface temperatures must be above 45°F, dew point not within 5° of surface temperature, and relative humidity less than 85%.

3.3 SURFACE PREPARATION

- A. General:
 - 1. Prepare and clean all surfaces to be painted in a workmanlike manner with the objective of obtaining a smooth, clean and dry surface, free from cracks, ridges, nail holes, etc.
 - 2. Remove or mask items not to be painted.
 - 3. Schedule cleaning and painting so that dust and other contaminants from cleaning operations will not fall onto newly painted surfaces.
- B. Ferrous metals:
 - 1. Remove all rust, dust, scale and other foreign substances.
 - 2. Give welded joints special attention, removing all welding flux, slag and weld spatter.

- C. Non-ferrous metals: Solvent clean prior to shop or field application of pretreatment and/or primer.
- D. Concrete:
 - 1. In accordance with SSPC-SP13/NACE 6 Surface Preparation of Concrete clean surface free of curing compounds, oil, grease, dirt, chalk or previously applied coatings.
 - 2. Surface to be dry unless otherwise indicated in printed instructions from the paint manufacturer.
- E. Masonry surfaces: In accordance with SSPC-SP13/NACE 6 Surface Preparation of Concrete clean surface free of curing compounds, oil, grease, dirt, chalk or previously applied coatings.
- F. Wood surfaces:
 - 1. Clean until free from dirt, oil, and other foreign substances.
 - 2. Smooth finished wood surfaces exposed to view, using the proper sandpaper. Where so required, use varying degrees of coarseness in sandpaper to produce a uniformly smooth and unmarred wood surface.
- G. Factory finished components: Solvent clean prior to field application of pretreatment and/or primer.

3.4 MATERIALS PREPARATION

- A. General:
 - 1. Mix and prepare paint materials in strict accordance with the manufacturer's recommendations as approved by the Engineer.
 - 2. When materials are not in use, store in tightly covered containers.
 - 3. Maintain containers used in storage, mixing, and application of paint in a clean condition, free from foreign materials and residue.
- B. Mixing:
 - 1. Mix materials in strict accordance with the manufacture's data sheet.
 - 2. Do not stir into the material any film which may form on the surface, but remove the film and, if necessary, strain the material before using.

3.5 PAINT APPLICATION

- A. General:
 - 1. Touch-up shop applied prime coats which have been damaged, and touch-up bare areas prior to start of finish coats application (see subsection 3.7 of this Section).
 - 2. Slightly vary the color of succeeding coats.
 - a. Do not apply additional coats until the completed coat has been inspected and approved.
 - b. Only the inspected and approved coats of paint will be considered in determining the number of coats applied.
 - 3. Sand and dust between coats to remove defects visible to the unaided eye from a distance of five (5') feet.
 - 4. On guards, covers, removable panels and hinged panels:
 - a. Remove fasteners before painting and re-install after paint is completely dry.
 - b. Remove or open guard, cover or panel for painting.

- c. Paint the back sides to match the exposed sides.
- B. Drying: Allow sufficient drying time between coats, modifying the period as recommended by the material manufacturer to suit adverse weather conditions.
- C. Brush or roller applications:
 1. Brush or roll coats onto the surface in an even film.
 2. Cloudiness, spotting, holidays, laps, brush or roller marks, runs, sags, ropiness and other surface imperfections will not be acceptable.
- D. Spray application:
 1. Except as specifically otherwise approved by the Engineer, confine spray application to metal framework and similar surfaces where handwork would be inferior.
 2. Where spray application is used, apply each coat to provide the hiding equivalent of brush coats.
 3. Do not double back with spray equipment to build up film thickness of two coats in one pass.

3.6 PAINTING SCHEDULE

- A. Provide one prime coat (shop or field) and two finish coats, unless otherwise specified, in accordance with the following:
- B. Systems:
 1. In the schedules following, the type of paint system is identified by symbol in parenthesis immediately behind the manufacturer's name:
 - a. Alkyd (A)
 - b. Acrylic (AC)
 - c. Acrylic Latex (ACL)
 - d. High Build Urethane (HBU)
 - e. High Solids Epoxy (HSE)
 - f. High Build Coal Tar Solution (HBCT)
 - g. Alkyd Gloss (AG)
 - h. Epoxy Polyamide (EP)
 - i. Silicone (S)
 - j. Silicone Aluminum (SA)
 - k. Modified epoxy (ME)
- C. Ferrous metal submerged, including ductile iron pipe, non-potable water and interior:
 1. Surface preparation: SSPC-SP10/NACE 2 Near-White Blast Cleaning.
 2. System: Tnemec (HSE):

Prime coat	Series 1 Omnithane, 2.5 – 3.5 dry mils
2nd coat	Series N69-1255 Beige Hi-Build Epoxoline II, 4.0 – 6.0 dry mils
3rd coat	Series 104-Color H.S. Epoxy, 8.0 -10.0 dry mils

3. Type finish: Semi-gloss.
- D. Ferrous metal submerged, potable water:
 1. Surface preparation: SSPC-SP10/NACE 2 Near White Blast Cleaning.
 2. System: Tnemec (EP):

Prime coat	Series 1 Omnithane 2.5 - 3.5 dry mils
2nd coat	Series N140-1255 Beige Pota-Pox Plus Beige at 4.0 - 6.0 dry mils
3rd coat	Series N140-15BL Tank White Pota-Pox Plus Finish at 4.0 - 6.0 dry mils

E. Ferrous metal, including D.I. pipe, non-immersion and exterior:

1. Surface preparation: SSPC-SP6/NACE 3 Commercial Blast Cleaning (fabrications) or SSPC-SP3 Power Tool Cleaning.
2. For ductile iron, "MC-FerroClad Primer, 3.0 - 5.0 dry mils", by Wasser High-Tech Coatings, may be substituted for the prime coat.
3. System: Tnemec (HBU):

Prime coat	Series 1 Omnithane, 2.5 - 3.5 dry mils
2nd coat	Series 135 Chembuild, 4.0 - 6.0 dry mils
3rd coat	Series 740 Endura-Shield, 3.0 - 5.0 dry mils

4. Type finish: Gloss.

F. New concrete block, exterior:

1. SSPC-SP13/NACE 6 Surface Preparation of Concrete. Stone rub to remove excessive mortar. Pressure wash. Surface must be dry and cured for a minimum of 28 days.
2. System: Tnemec (ME):

1st coat	Series 156 Color Enviro-Crete, 12.0 - 16.0 dry mils
2nd coat	Series 156-Color Enviro-Crete, 12.0 - 16.0 dry mils

3. Type finish: Flat, sand.

G. Existing concrete block, exterior:

1. SSPC-SP13/NACE6 Surface Preparation of Concrete. Power wash with 5,000 psi using the rotating "turbo" nozzle, to remove all loose paint, dirt, dust, mildew and all other foreign matter.
2. System: Tnemec (ME)

Prime coat	Series 151 Elasto-Grip, 0.7 - 1.5 dry mils
2nd coat	Series 156 Enviro-Crete, 4.0 - 6.0 dry mils
3rd coat	Series 156 Enviro-Crete, 4.0 - 6.0 dry mils

3. Type finish: Flat, sand.

G. Existing concrete block, interior:

1. SSPC-SP13/NACE6 Surface Preparation of Concrete. Power wash with 5,000 psi using the rotating "turbo" nozzle, to remove all loose paint, dry, dust, mildew and all other foreign matter.
2. System: Tnemec (ME)

Prime coat	Series 151 Elasto-Grip, 0.7 - 1.5 dry mils
2nd coat	Series N69 Hi-build Epoxoline II, 4.0 - 8.0 dry mils
3rd coat	Series N69 Hi-Build Epoxoline II, 4.0 - 8.0 dry mils

3. Type finish: Flat, sand.

H. Non-ferrous metals:

1. Treat with manufacturer's recommended wash primer or pretreatment.
2. Provide finish coats as specified in paragraphs 3.6C or 3.6D above.

I. Insulated pipe:

1. Surface preparation: Surface shall be clean and dry.
2. System: Tnemec (ACL):

1st coat	Series 6-Color Tnemec-Cryl, 2.0 – 3.0 dry mils
2nd coat	Series 6-Color Tnemec-Cryl, 2.0 – 3.0 dry mils

3. Type finish: Low sheen.

NOTE: For semi-gloss finish, use Series 1029-Color Enduratone.

J. PVC piping systems:

1. Surface preparation: Surface must be dry and clean.
2. System: Tnemec (EP):

1st coat	Series N69 Hi-Build Epoxoline, 4.0 – 6.0 dry mils
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K. Existing pressure vessel exterior:

1. Surface preparation: SSPC-SP6/NACE 3 Commercial blast cleaning. The surface must be clean and dry before painting.
2. System: Tnemec (EP):

Prime coat	Series 1 Omnithane 2.5 – 3.5 dry mils
2nd coat	Series N60 Hi-Build Epoxoline 4.0 – 8.0 dry mils
3rd coat	Series N740 UVX 3.0 – 5.0 dry mils

3.7 TOUCH-UP OF APPLIED COATINGS

- A. Prior to any touch-up, the area is to be SP-3 brush cleaned.

B. Shop applied coatings:

1. Shop applied coatings with specified primer, as listed in Part 3.6 above, shall be touched up with the same listed primer before any topcoat(s) are applied.
2. Shop applied coatings with manufacturer's standard paint shall be touched up with a compatible barrier coating, Tnemec Series 135 Chembuild or Ameron Amercoat 385.
 - a. Manufacturer shall notify the Engineer in writing if the manufacturer's standard paint is unable to receive the specified top coat(s) or if problems are anticipated due to incompatible coating systems.

- C. Field applied coatings: After cleaning, apply specified primer followed by specified finish coats.

3.8 COLOR CODING, PIPING

- A. Paint piping the same color as background, i.e., walls, ceiling, etc.
- B. Install self-adhesive piping markers, "Set-Mark" by Seton Nameplate Corporation of New Haven, Connecticut, or equal, to indicate contents of pipe.
1. Install at 15'0" on center, at every valve, where pipes pass through walls, and where separate pipes cross.

3.9 COATING THICKNESS

A. General:

1. In all cases, the value stated for dry film thicknesses are average, based upon application to a smooth surface.
2. Dry film thickness gauges will be used as the application of each coat proceeds, to check the film thickness as applied.
3. Failure to obtain the proper dry thickness will require the application of additional coats until proper dry thickness is obtained.

3.10 INSPECTION AND ACCEPTANCE

- A. Examination of overall appearance and measurement of dry film thickness.
- B. Correct defects and/or deficiencies to satisfaction of the Engineer.
- C. Observation by the Engineer will be required at the following intervals:
 1. At the end of each surface cleaning operation before paint is applied.
 2. After each coat of paint is applied.
 3. The Contractor shall be responsible to contact and coordinate the time of each observation with the Engineer.

3.12 CLEAN-UP

- A. Upon completion, painting contractor shall clean-up and remove from site all surplus materials, tools, appliances, empty cans, cartons, and rubbish resulting from painting work. Site shall be left in neat, orderly condition.
- B. Remove all protective drop cloths and masking from surfaces not being painted. Provide touch-up around same areas as directed by the Engineer.
- C. Remove all misplaced paint splatters or drippings resulting from this work.

3.13 MEASUREMENT AND PAYMENT

- A. No separate measurement or direct payment will be made for the work under this Section and all costs for same shall be included in the price bid for the item to which it pertains.

END OF SECTION

SECTION 10400
IDENTIFYING DEVICES

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work included: Provide identifying devices where shown on the Drawings, as specified herein, and as needed for a complete and proper installation including, but not necessarily limited to:
 - 1. Door signs.
 - 2. OSHA signs.
 - 3. Chemical information signs.
 - 4. Equipment identification.
- B. Related work: Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.

1.2 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

1.3 SUBMITTALS

- A. Comply with pertinent provisions of Section 01340.
- B. Product data: Within 45 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:
 - 1. Materials list of items proposed to be provided under this Section.
 - 2. Manufacturer's specifications and other data needed to prove compliance with the specified requirements.
 - 3. Details of installation and anchorage sufficient to enable proper interface of the work of this Section with the work of other trades.
 - 4. Manufacturer's recommended installation procedures which, when approved by the Engineer, will become the basis for accepting or rejecting actual installation procedures used on the Work.
 - 5. Sign location and designation schedule.

1.4 PRODUCT HANDLING

- A. Comply with pertinent provisions of Section 01640.

PART 2 - PRODUCTS

2.1 APPROVED MANUFACTURERS

- A. Design is based on use of standard products manufactured by Seton Name Plate Company of New Haven, CT and is named to establish standards of quality.

- B. Provide the products upon which design is based or provide equal products of another manufacturer approved in advance by the Engineer.
- C. Except as otherwise approved by the Engineer, provide all products of this Section from a single manufacturer.

2.2 BUILDING IDENTIFICATION

- A. Consult the Engineer in advance and secure the official street address number.
- B. Provide the manufacturer's standard mounting system as appropriate for the surfaces shown on the Drawings.

2.3 DOOR SIGNS

- A. Room name signs:
 - 1. Provide plastic laminate signs for each existing room with message engraved through the first layer to expose the contrasting color of the inner core.
 - a. Outdoor "Setonflex".
 - b. Indoor - "Setonite".
 - 2. Provide beveled edges.
 - 3. Mounting: Use double-sided 1/32" thick vinyl tape or silastic adhesive.
 - 4. Message: See door schedule.
 - 5. Size: 2"H by length required, by 1/8".
 - 6. Background color: To be selected by the Engineer from manufacturer's standard colors.
 - 7. Lettering to be white.
 - 8. Type style: "Normal Gothic", 1" high, all caps.
- B. Hazardous area signs:
 - 1. Provide danger signs on doors to all areas containing materials indicated in the sign schedule in Paragraph 2.6 below.
 - 2. Provide 10" x 7" sign.
 - 3. Sign material:
 - a. Provide 60 mil. thick press polished high performance vinyl plastic.
 - b. Provide sunlight fade resistance.
 - c. Overcoat with Tedlar.
 - 4. Provide rounded corners.
 - 5. Mount with stainless steel screws.
- C. Exit signs:
 - 1. Provide on the inside face of exterior doors.
 - 2. Provide 10" x 7" sign with red letters on white background.
 - 3. Comply with OSHA regulations.
 - 4. Material - Pressure sensitive vinyl.

2.4 DANGER SIGNS

- A. Provide danger signs where indicated on the plans or as specified herein.
- B. Sign material:
 - 1. Provide 60 mil. thick press polished high performance vinyl plastic.
 - 2. Provide sunlight fade resistance.
 - 3. Overcoat with Tedlar.

- C. Provide 14" x 10" sign.
- D. Main heading to read: "DANGER", white letters on red background with black border. Subtitle to have black letters on white background.
- E. Comply with OSHA standards.
- F. Provide rounded corners.
- G. Mount with stainless steel screws.
- H. Danger sign schedule:

AREA	SIGN SUBTITLE	NO. SIGNS PER AREA
Chlorine Feed*	Chlorine	1
Chlorine Storage*	Chlorine	3
Electrical Room*	High Voltage	1
Equipment that starts Automatically	This Machine Starts Automatically	1
*Provide danger signs on doors entering these areas also. (See Paragraph 2.3)		

2.7 CAUTION SIGNS

- A. Provide caution signs where indicated on the plans or specified herein.
- B. Sign material:
 - 1. Provide 60 mil. thick press polished high performance vinyl plastic.
 - 2. Provide sunlight fade resistance.
 - 3. Overcoat with Tedlar.
- C. Provide 14" x 10" sign unless otherwise designated.
- D. Main heading to read: "CAUTION", yellow letters on black background with yellow border. Subtitle to have black letters on yellow background.
- E. Comply with OSHA standards.
- F. Provide rounded corners.
- G. Mount with stainless steel screws.
- H. Caution sign schedule:

2.9 CHEMICAL INFORMATION SIGNS

- A. Provide one chemical information sign at each of the following locations:
 - 1. Chlorine storage.
 - 2. Sodium Silicofluoride storage.
 - 3. Lime storage.
- B. Size - 10" x 14".
- C. Sign material:
 - 1. Provide 60 mil. thick press polished high performance vinyl plastic.
 - 2. Provide sunlight fade resistance.

3. Overcoat with Tedlar.
- D. Include the following information on each sign:
 1. Name of product.
 2. Fire or explosion hazard.
 3. Emergency action.
 4. Spill or leak procedure.
 5. Fire extinguishing method.
 6. First aid instructions.
 7. NFPA 704 hazard identification signal showing health, flammability, reactivity and special hazards.

2.10 EQUIPMENT IDENTIFICATION

- A. Provide for equipment listed below:
 1. Chlorine booster pumps.
 2. Lime metering pumps.
 3. Fluoride metering pumps.
 4. Fluoride volumetric feeder
 5. Air Compressor
- B. Designate equipment name and equipment number.
- C. Sign size - 1" x length required with 1/4" lettering.
- D. Sign material - Plastic laminate, outdoor grade, black background with white lettering.
- E. Provide for both adhesive and screw mounting.
- F. Provide rounded corners.
- G. Mount with stainless steel screws.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

- A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.2 INSTALLATION

- A. Install the work of this Section in strict accordance with the manufacturer's recommendations as approved by the Engineer, using only the approved mounting materials, and locating all components firmly into position, level and plumb.
- B. Locate where directed by the Engineer.
- C. Mounting hardware to be stainless steel.
- D. Where adequate sign supports are not available, fabricate sign stand using unistrut channel and fittings.

3.3 MEASUREMENT AND PAYMENT

- A. No separate measurement or direct payment will be made for the work under this Section and all costs for same shall be included in the lump sum price for the item to which it pertains.

END OF SECTION

SECTION 10445
PIPING IDENTIFICATION SYSTEMS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work included: Provide piping identification systems as specified herein and as needed for a proper and complete installation for the following existing and new piping systems:
 - 1. Process piping.
 - 2. Potable water piping.
 - 3. Chemical piping.
 - 4. Plumbing.
 - 5. Valves.
- B. Related work: Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions and Sections in Division 1 of these specifications.

1.2 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

1.3 SUBMITTALS

- A. Comply with pertinent provisions of Section 01340.
- B. Product data: Within 60 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:
 - 1. Materials list of items proposed to be provided under this Section.
 - 2. Manufacturer's specifications and other data needed to prove compliance with the specified requirements.

1.4 PRODUCT HANDLING

- A. Comply with pertinent provisions of Section 01640.

PART 2 - PRODUCTS

2.1 PIPE MARKERS

- A. All pipe markers shall conform to ANSI/OSHA pipe marking specifications.
- B. Each marker must show:
 - 1. Approved color coded background.
 - 2. Proper color of legend in relation to background color.
 - 3. Approved legend letter size.
 - 4. Approved marker length.

- C. Provide direction of flow arrows at each pipe marker.
- D. Provide wrap-around snap on type for piping 5" and smaller.
 - 1. Provide "Setmark" pipe markers as manufactured by Seton Name Plate Corporation, New Haven, CN or approved equal.
- E. Use pressure sensitive, adhesive backed, vinyl markers for piping 6" and larger.
 - 1. Provide "Opti-Code" pipe markers as manufactured by Seton Name Plate Corporation, New Haven, CN or approved equal.
- F. Working/Color Combinations:
 - 1. Provide markers in the required number for the following services:

LEGEND WORDING	MARKER COLOR
Air - Caution Hot	BL
Backwash	G
Backwash Drain	G
Chlorine	Y
Cold Water	G
Drain	G
Filtered Water	G
Fluoride	B
Hot Water	Y
Lime	B
Non-Potable Water	G
Potable Water	G
Treated Water	G

- 2. Provide ANSI standard for other piping.
- G. Pump piping:
 - 1. Provide one each of the following markers at each pump. Locate at the piping connection to the pump.

LEGEND WORDING	MARKER COLOR
Suction	Y
Discharge	GW

2.2 VALVE IDENTIFICATION TAGS

- A. Provide an identification tag for each exposed valve, or buried valve with exposed actuator.
- B. Provide anodized aluminum tag, .032" thick, 2" diameter with 3/16" top hole.
- C. Engrave one side.
- D. Provide color to match material for valve service from schedule in 2.1 above.
- E. Include the following information on each valve:
 - 1. Valve number.

- 2. Contents
- 3. Normal position
 - a. "Normally Open" or "Normally Closed"

F. Attach to valve with stainless steel "S" hook and No. 16 stainless steel jack chain.

PART 3 - EXECUTION

3.1 LOCATION FOR MARKERS

- A. Adjacent to each valve and fitting.
- B. At each branch and riser take-off.
- C. At each pipe passage through wall, floor or ceiling.
- D. At each pipe passage to underground.
- E. On all horizontal pipe runs, mark every thirty (30') feet.

3.2 PIPE MARKER INSTALLATION

- A. Clean pipe surface and apply markers in accordance with manufacturer's instructions.
- B. When applied to insulated or siliconed surfaces:
 - 1. Use pressure sensitive bonding type around both ends of the marker, being sure to overlap the tape onto itself.

3.3 INSPECTION

- A. Correct defects and/or deficiencies to satisfaction of the Engineer.

3.4 MEASUREMENT AND PAYMENT

- A. No separate measurement or direct payment will be made for the work under this Section and all costs for same shall be included in the price bid for the item to which it pertains.

END OF SECTION

SECTION 11240.1
CHEMICAL FEED EQUIPMENT

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work included: Provide powdered lime and powdered feeders, as indicated, specified herein, and as needed for a complete and proper installation.
- B. Related work:
 - 1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplemental General Conditions, and Sections in Division 1 of these Specifications.
 - 2. Section 02751 - Plant Piping, Valves & Appurtenances
 - 3. Section 16400 - Electrical.

1.2 QUALITY ASSURANCE

- A. Referenced manufacturer is Wallace & Tiernan for lime and fluoride feed systems. This manufacturer is named to establish standards of quality. Equal products of other manufacturers complying with these specifications may be offered for approval.
- B. Technical services: Provide service of equipment manufacturer's service engineer, complying with Section 01660 and the following:
 - 1. Lime:
 - a. Installation - One day, one trip.
 - b. Start-up and training - Two days, one trip.
 - 2. Fluoride:
 - a. Installation - One day, one trip.
 - b. Start-up and training - Two days, one trip.
- C. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

1.3 SUBMITTAL

- A. Comply with pertinent provisions of Section 01340.
- B. Product data: Within 90 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:
 - 1. Materials list of items proposed to be provided under this Section.
 - 2. Manufacturer's specifications and other data needed to provide compliance with the specified requirements.
 - 3. Shop drawings showing plan, elevation and sectional views and materials of construction.
 - 4. Names and addresses of the nearest service and maintenance organization that readily stocks repair parts.
- C. Provide Operation and Maintenance manuals complying with Section 01650.

1.4 PRODUCT HANDLING

- A. Comply with pertinent provisions of Section 01640.
- B. Each unit shall be carefully transported, stored, handled and set in place in a manner that will prevent distortion, misalignment or other damage to the units.
- C. During storage prior to installation and following installation, the manufacturer's recommendations regarding handling shall be followed.

1.5 JOB CONDITIONS

- A. Install all equipment at the location and within the space allotted on the Contract Drawings.
- B. Structural, piping, wiring or any other modifications necessary to accommodate equipment offered other than that shown or specified shall be made at no additional cost to the Owner.

1.6 WARRANTY

- A. Comply with provisions of Section 01650.

PART 2 - PRODUCTS

2.1 LIME FEED SYSTEM

- A. Provide and install one (1) round, 39 inch diameter 260 gallon open top tank and hinged cover.
 - 1. Provide Chemtainer polyethylene, open top tank with with hinged cover or engineer approved equal.
- B. Provide a 1/2 Hp mechanical mixer suitable for operation on 115/230V, 3 Ph, 60 Hz power at 1725 rpm and a floor mounted motor stand.
 - 1. Provide Leeson motor and mixer.
- C. Provide metering pump with head size 2" having a 1/2 Hp motor, a backpressure of 175 psi with a flow rate of 31.7 GPH at a stroke length of 100% and a flow rate of 5.07 at a stroke length of 25%.
 - 1. Provide 36" tall steel, powder coated pump mounting stand.
 - 2. Provide Wallace & Tiernan Encore 700 diaphragm metering pump.

2.2 FLUORIDE FEED SYSTEM

- A. Provide and install one (1) volumetric dry feeder with a maximum feed range of 0.20 to 0.6 cubic feet per hour by changing belt positions on a 3:1 ratio, 4-stop drive pulley. Minimum feed to one-twentieth of maximum.
 - 1. Feeder to have 14 gauge steel housing, bonderized and finished with enamel.
 - 2. Feed helix shall be a progressive pitch helix of Type 316 stainless steel and discharge spout shall be steel, no less than five (5) inches long.
 - 3. Inner sloped sides of the 1.6 cubic feet capacity feeder shall be BUNA-N diaphragms which pulsate by 1/8" cast ductile iron paddles, chain and sprocket driven by the helix drive motor, speed of pulsation proportional to feed rate.

4. Feeder drive shall operate on 115/230V, 3 Ph, 60 Hz current.
 - a. Feeder and controls shall comply with NEC requirements for electrical equipment and wiring in Class II, Division 1, Group F and G hazardous locations.
 5. Changes in feed rate shall be accomplished by means of local manual adjustment while the feeder is in operation.
 6. Volumetric accuracy of feeder shall be within 3% of set rate based on a five (5) minute test.
 7. Provide Wallace & Tiernan Series 32-055 Volumetric Feeder.
- B. Metering pump: Provide metering pump with head size 2" having a 1/2 Hp motor, a backpressure of 175 psi with a flow rate of 31.7 GPH at a stroke length of 100% and a flow rate of 5.07 at a stroke length of 25%.
1. Provide 36" tall steel, powder coated pump mounting stand.
 2. Provide Wallace & Tiernan Encore 700 diaphragm metering pump.
- C. Solution tank: Feeder to be supplied with 35 gallon stainless steel solution tank having a 1/4 Hp mechanical mixer suitable for operation on 115/230V, 3 Ph, 60 Hz power.
- D. Mounting stand: Provide 36" tall feeder mounting stand which will locate feeder to side of the tank.
- E. Scale: Provide a 30" x 30" low profile platform scale with EI-1000 electronic indicator.
1. Provide Eagle Microsystems LP4300 low profile platform scale.
- F. Extension hopper:
1. Provide 4.5 cubic feet extension hopper, constructed from not less than 16 gauge steel.
 2. Hopper to have hinged cover for loading, and connection for ductwork leading to dust collector.

2.3 ACCESSORIES

- A. Calibration columns:
1. Provide one (1) calibration column and isolation valves for each pump skid.
 2. Calibration column will be located on the front of the system skids to provide for ease of access during calibration.
 3. Provide the following calibration column sizes:
 - a. Fluoride: 500 mL
 4. Provide clear easy to read graduation markings in gallons and standard divisions for computation of flow rate in gallons per hour.
 5. Provide calibration columns and column caps that are resistant to the chemicals being pumped.
- B. Pressure relief valve:
1. Provide in accordance with Section 02751.
 2. Provide vent tubing routed to pump suction piping unless otherwise shown on Drawings.

C. Pulsation dampener:

1. Provide chargeable dampener that consists of a two-part housing, bell shaped bladder, one-way air inlet valve to prevent product backflow, pressure gauge, and air fill valve.
2. Provide dampener housing that is made of PVC.
3. Provide a bladder that is selectable as either Hypalon or Viton and is compatible with the process fluid.
 - a. Acceptable manufacturer: Blacoh.

D. PVC and CPVC backpressure, pressure relief, and anti-siphon valves (3/8" to 2")

1. Provide in-line mounted PVC or CPVC construction to match pipe material with the following:
 - a. PTFE bonded diaphragm.
 - b. Adjustable setting from 3 psi to 60 psi with a spring tensioning bolt.
 - c. 150 psi maximum inlet pressure.
 - d. Provide with true-union ends with Viton seals unless otherwise indicated.
2. Provide Chemline Plastics Limited model SB10.

E. Pressure Gauge Assembly

1. Comply with section 02751.

2.4 OTHER MATERIALS

- A. Provide other materials, products or items not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Engineer.

PART 3 - EXECUTION

3.1 COORDINATION

- A. Coordinate as required with other trades to assure proper and adequate provision in the work of those trades for interface with the work of this Section.

3.2 INSTALLATION

- A. Locate feeders as indicated, anchoring securely to floor using stainless steel fasteners.
- B. Piping:
1. Install suction and discharge tubing and water piping as indicated on the Contract Drawings.
 2. Locate piping parallel with, or at right angles to, walls, ceilings, equipment, etc., unless otherwise indicated.
- C. Electrical and control wiring: Comply with pertinent provisions of Section 16400.

3.3 TESTING AND INITIAL OPERATION

- A. Manufacturer's service engineer(s) shall test and place all equipment in initial operation and provide training in operation to Owner's personnel.
- B. Replace or remedy to satisfaction of the Engineer any defective materials, equipment, etc.

3.4 MEASUREMENT AND PAYMENT

- A. No separate measurement or direct payment will be made for this work and all costs for same shall be included in the price bid for the work to which it pertains.

END OF SECTION

SECTION 11263
PRESSURE FILTERS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work included: For each filter tank to be rehabilitated, provide removal of the existing filter media and support gravel, clean and pressure wash tank interior, inspect tank interior for structural damage, remediate any structural damage to the filter, filter bottom and baffles, provide and install new support gravel, filter sand and anthracite media and provide disinfection and testing for placing the filter back into service for a complete iron removal system, specified herein, and as needed for a complete and proper installation.
 - 1. Each of the existing filter tanks has the following approximate dimensions and characteristics:
 - a. Length: 7 feet.
 - b. Diameter: 96 inches.
 - c. Cells: one (1).
- B. Related work:
 - 1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
 - 2. Section 09870 - Repaint Existing Pressure Vessel.

1.2 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- B. All equipment shall be supplied by a single manufacturer for a complete operational system.
- C. Workmanship and finish shall be the best in modern shop practice.
 - 1. Welders must be qualified within the previous year, in accordance with the requirements of the American welding society.
 - 2. Records of compliance of these specified tests shall be available to the Engineer at the project site.

1.3 SUBMITTALS

- A. Comply with pertinent provisions of Section 01340.
- B. Product data: Within 30 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:
 - 1. Materials list of items proposed to be provided under this Section.
 - 2. Manufacturer's specifications and other data needed to prove compliance with the specified requirements.
 - 3. Shop drawings showing plan, elevation and sectional views and materials of construction.

4. A list of installations of similar projects, with date of installation and names and addresses of responsible Owner's personnel who are familiar with the project.

1.4 PRODUCT HANDLING

- A. Comply with pertinent provisions of Section 01640.
- B. During storage prior to installation and following installation, the manufacturer's recommendations regarding handling shall be followed.
- C. Deliver excess filter media and support gravel to a storage location as directed by the Owner at no additional cost.

1.5 JOB CONDITIONS

- A. Install all equipment at the location and within the space allotted on the Contract Drawings.
- B. Structural, piping, wiring or any other modifications necessary to accommodate equipment offered other than that shown or specified shall be made at no additional cost to the Owner.

1.6 WARRANTY

- A. Comply with provisions of Section 01650.

PART 2 - PRODUCTS

2.1 FILTER MEDIA AND SUPPORT GRAVEL

A. Support Gravel:

1. Provide support gravel consisting of hard rounded stones with an average specific gravity of not less than 2.5 with no more than 2% of weight of pieces in which the length is three times the width.
 - a. Support gravel to be washed, screened, and free of shale, mica, clay, sand, dirt and organic impurities.
2. Place the support gravels in the tank as follows:

<u>Layer</u>	<u>Depth</u>	<u>Size</u>
Bottom	3"	3/4" x 1/2"
Second	3"	1/2" x 1/4"
Third	3"	1/4" x 1/8"
Top	3"	1/8" x 1/16"

B. Filter Media:

1. The filter media shall be placed on top of the support gravel as follows:

<u>Layer</u>	<u>Depth</u>	<u>Size</u>	<u>Uniformity Coefficient</u>
Sand	12"	0.45 - 0.55mm	≤1.6
Anthracite	18"	0.60 - 0.80mm	≤1.6

- C. Procure the support gravels and filter media from a manufacturer that complies with AWWA B-100 standards.

- D. All support gravel and filter media must National Sanitation Foundation (NSF), (ANSI/NSF Standard 61) certified.
- E. Provide sufficient quantities to account for skimming losses.

PART 3 - EXECUTION

3.1 COORDINATION

- A. Coordination as required with other trades to assure proper and adequate provision in the work of those trades for interface with the work of this Section.

3.2 TANK REPAIR

- A. Provide all labor, equipment, tools, scaffolding and other items necessary to make the necessary structure remediations complete.
- B. Materials for construction and welding and/or shop fabrication, shall conform to the requirements of AWWA D100-96, "Welded Steel Tanks for Water Storage", except as otherwise specified herein.
- C. All weld seams, both butt and lap, shall be welded continuously inside and outside.
- D. Any clips, jigs, lugs, etc., welded to shell plates for erection purposes shall be removed without damage to the plate and weld beads remaining to be chipped or ground smooth.
- E. All welds in the tank and structural attachments to be made in a manner to ensure complete fusion with the base metal.
- F. Rough welds shall be ground smooth.
- G. All weld seams and accessories shall be welded both on the interior and exterior of the tank. All accessories shall be welded both inside and outside.

3.3 CLEAN-UP

- A. Upon completion of the work, the Contractor will remove or dispose of all rubbish, trash and other unsightly material, etc. from the site.

3.4 TESTING AND INITIAL OPERATION

- A. Manufacturer's service engineer to test and place all equipment back in initial operation and provide training in operation to Owner's personnel.
- B. Replace or remedy to satisfaction of the Engineer any defective materials, equipment, etc.

3.5 MEDIA INSTALLATION

- A. Carefully place each layer so as not to disturb the previous layers.
- B. Install the support gravels and filter media in accordance with the filter manufacturer's recommended instructions.
- C. Complete the installation of each layer before the next layer above is started.
 - 1. Do not stand or walk directly upon the filter materials.

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2. Workers must stand or walk on boards that will sustain their weight without displacing the media.
- D. Clean the filter cells before any media is placed and keep them clean throughout the placing operation.
- E. Support Gravel:
 1. Place the fill section and bottom layer of the screened support gravel by hand to avoid damage to the diffuser assemblies.
 2. Place and level each layer before the next layer is started.
 3. A gravel-less underdrain shall not be acceptable.
- F. Filter Sand and Filter Anthracite:
 1. Place the filter sand and filter anthracite in the bed in the order of their respective specific gravities.
 2. Place and level the filter sand first and backwash the bed a minimum of three times, and remove the surface fines by scraping as required to the correct elevation.
 3. Place the filter anthracite and backwash the bed three times, and remove the surface fines by scraping as required to the correct elevation.

3.6 PAINTING

- A. Comply with pertinent provisions of Sections 09870 and 09900.

3.7 DISINFECTION

- A. Upon completion installation and prior to treating groundwater, the tank must be disinfected in accordance with AWWA D-105-80 and the following:
 1. Spray the inside of the tank and riser with a 200 ppm chlorine solution. Disinfection shall remain in contact for a minimum of 2 hours.
 2. Rinse down to remove all heavy concentrations of chlorine.
 3. Following chlorination, drain all treated water from the tank and refill.
 - a. All water drained from the tank must be dechlorinated.
 - b. Coordinate all draining with the Owner.
 4. Two (2) separate samples shall be taken by the Contractor and witnessed by the Owner, unless otherwise agreed in writing, at 24-hour intervals and a bacteria analyses performed which indicate no coliform bacteria present in each sample.
 - a. The chlorine residual at the time of sampling must be measured and reported.
 - b. All samples shall be analyzed by a State-approved laboratory.
 - c. The cost of testing is the responsibility of the Contractor.
- B. If initial samples are unsatisfactory, the procedure shall be repeated until satisfactory results are obtained at no additional cost to the Owner.
- C. Costs for the disinfection procedure, securing of samples and laboratory testing associated with the repeated procedures shall be the total responsibility of the Contractor at no additional cost of the Owner.
- D. Notify the Engineer in writing at least seven (7) days prior to disinfection.

3.8 MEASUREMENT AND PAYMENT

- A. Payment will be made at the unit prices as stated in the Bid Form and no separate measurement or direct payment will be made for this work and all costs for same shall be included in the price bid for the item to which it pertains.

END OF SECTION

SECTION 11265
CHLORINE FEED EQUIPMENT

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work included: Provide chlorine booster pumps as indicated, specified herein, and as needed for a complete and proper installation.
- B. Related work:
 - 1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
 - 2. Section 16400 - Electrical.

1.2 QUALITY ASSURANCE

- A. Referenced manufacturer is Dayton pumps and is named to establish standards of quality. Equal products of other manufacturers conforming to these specifications may be provided as outlined in Section 00310 and as approved by the Engineer.
- B. Technical services: Provide service of equipment manufacturer's service engineer, complying with Section 01660 and the following:
 - 1. Chlorine booster pumps
 - a. Installation - One day, one trip.
 - b. Start-up and training - One day, one trip.
 - 2. Chlorine gas detection system
 - a. Installation - One day, one trip.
 - b. Start-up and training - One day, one trip.
- C. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

1.3 SUBMITTALS

- A. Comply with pertinent provisions of Section 01340.
- B. Product data: Within 45 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:
 - 1. Materials list of items proposed to be provided under this Section.
 - 2. Manufacturer's specifications and other data needed to prove compliance with the specified requirements.
 - 3. Shop drawings showing plan, elevation and sectional views and materials of construction.
 - 4. An installation of similar projects, with date of installation and names and addresses of responsible Owner's personnel who are familiar with the project.
 - 5. Names and addresses of the nearest service and maintenance organization that readily stocks repair parts.

- C. Provide Operation and Maintenance manuals complying with Section 01650.
 - 1. Include in each manual an original copy of the "Chlorine Manual" as prepared by The Chlorine Institute, Inc.
- 1.4 PRODUCT HANDLING
 - A. Comply with pertinent provisions of Section 01640.
 - B. Each unit shall be carefully transported, stored, handled and set in place in a manner that will prevent distortion, misalignment or other damage to the units.
 - C. During storage prior to installation and following installation, the manufacturer's recommendations regarding handling shall be followed.
- 1.5 JOB CONDITIONS
 - A. Install all equipment at the location and within the space allotted on the Contract Drawings.
 - B. Structural, piping, wiring or any other modifications necessary to accommodate equipment offered other than that shown or specified shall be made at no additional cost to the Owner.
- 1.7 WARRANTY
 - A. Comply with provisions of Section 01650.

PART 2 - PRODUCTS

2.1 CHLORINE BOOSTER PUMPS

- A. Provide two (2) single end suction, close coupled, electric motor driven, centrifugal pump(s), each with minimum capacity of 15.4 GPM at a backpressure of 10 psi.
- B. Motors shall be 1 Hp and wired for use on 230 volt, 3 phase, 60 Hz current.
- C. Acceptable products: Dayton 5NXZ8.

2.2 CHLORINE PIPING AND VALVES

- A. Furnish in sizes and type indicated on the Contract Drawings.
- B. Use rigid polyvinyl chloride (PVC) piping and fittings conforming to ASTM D 1787 for Schedule 80, PVC 1120 pipe.
 - 1. Join with solvent weld couplings.
- C. Use flexible polyethylene (PE) plastic tubing conforming to ASTM D 2737-74 for PE2306, SDR 9, minimum burst pressure of 630 psi.
- D. Provide ball valves, of top entry design, "non-spherical" ball, full port opening, molded virgin teflon seats, and EPDM seals.
 - 1. Valve design shall provide for removal or replacement of all internal components while still attached to piping system.
 - 2. Valves shall be Grinnell Series 70 or equal.

2.3 CHLORINE GAS DETECTION SYSTEM

- A. Provide at the existing chlorine room.
- B. Provide a chlorine gas detection system to continuously monitor the existing chlorine feed room for the presence of chlorine gas in the ambient atmosphere as indicated, specified herein, and as needed for a complete and proper installation.
 - 1. Provide chlorine gas detection system consisting of the following components:
 - a. Power supply module.
 - b. Provide one (1) receiver module.
 - c. Provide one (1) sensor(s)/transmitter(s).
 - 2. Provide system capable of monitoring either a single sensor point or two separate sensor points for the presence of the same gas or for two different gases as indicated herein.
 - 3. Provide gas detection system with the following ranges:
 - a. Chlorine (0 - 10 ppm)
 - 4. Provide Siemens Acutec 35 Gas Detection System.
- C. Alarms:
 - 1. Provide two independent alarm setpoints for each sensor point.
 - a. Setpoints to be adjustable from 5% to 100% of range.
 - b. Provide separate alarm LEDs and an integral alarm horn.
 - c. Provide alarm to indicate failure of a sensor to self- test.
 - d. Provide alarm to indicate loss of input current to the power supply module.
- D. Provide separate four (4) digit sunlight readable LEDs to display gas concentration in ppm and a 4-20 mA output signal proportional to the gas concentration.
- E. Components
 - 1. Power supply module:
 - a. Power supply module to accept any alternating current input between 85V and 255V.
 - b. Power supply module to convert input current into a 13.7V direct current output.
 - c. Provide built-in power failure alarm relay.
 - d. Provide a back-up battery system with continuous automatic recharge consisting of a sealed lead-acid battery mounted in a separate enclosure to maintain all gas detection system functions for a minimum of 6 hours in the event of a power failure.
 - 2. Receiver module:
 - a. Provide the following numbers and types of gas specific receiver modules:
 - 1) Provide one (1) chlorine module.
 - b. Each module to contain four (4) separate LED indicators for operational and alarm status as follows:
 - 1) Warning.
 - 2) Alarm.
 - 3) Sensor failure.
 - 4) Power.

- c. Provide three (3) separate alarm relays that can be assigned to the two alarm setpoints and configurable for normal/fail-safe, latching/non-latching, and fast/slow operation.
 - d. Relay contacts to be rated 10A at 120 VAC and 5A at 250 VAC resistive, single pole double throw (SPDT).
 - e. Provide a forth relay to indicate a sensor failure in the event that the transmitter cable is disconnected or if the automatic integral autotest sensor fails.
 - f. Provide DIP switches in the receiver to adjust the operating range of the sensors.
 - g. Provide acknowledge/reset button to silence alarm, reset alarm circuit, test LED indicator, and inhibit alarm for servicing.
3. Sensor/transmitter:
- a. Provide electrochemical type, specific for the gas being monitored.
 - b. Provide NEMA 4X enclosure suitable for wall mounting.
 - c. Operating life to be two years minimum.
 - d. Transmitter to be powered by the receiver module through a two-cable up to 1000' long.
 - e. Power cable to be used also to carry signal back to receiver module.
 - f. Provide integral electrochemical gas generator that automatically produces a specific gas sample to test the sensor response daily.
4. Alarm Indication
- a. Provide strobe light and horn gas detection alarm indication activated by gas detectors.
 - b. Strobe light: AC, vapor tight, alarm strobe light with red globe, guard and mounting hardware. Federal signal LP3P.
 - c. Alarm horn: 120V AC, single projector, vibrating type horn with weatherproof housing, including mounting lugs, and conduit tap. Federal signal 350.
 - d. Mount on interior/exterior of building/structure as indicated on the plans.
 - e. Horn and lights to operate simultaneously under alarm conditions.

2.4 OTHER MATERIALS

- A. Provide other materials, products or items not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Engineer.

PART 3 - EXECUTION

3.1 COORDINATION

- A. Coordinate as required with other trades to assure proper and adequate provision in the work of those trades for interface with the work of this Section.

3.2 INSTALLATION

- A. Booster pumps:
 - 1. Locate as indicated, anchor to 4" high concrete base.
 - 2. Make all piping, electrical and control connections in accordance with the Contract and Shop Drawings.

B. Piping:

1. Install water, gas (vacuum) supply, chlorine solution and vent piping as indicated on the Contract Drawings.
2. Locate piping parallel with, or at right angles to, walls, ceilings, equipment, etc. unless otherwise indicated.

C. Chlorine Gas Detection

1. Locate equipment as shown on drawings.
2. Install using stainless steel hardware and fasteners.

D. Electrical and control wiring:

1. Comply with pertinent provisions of Section 16400.

3.3 TESTING AND INITIAL OPERATION

A. Chlorine Booster Pumps

1. Manufacturer's service engineer to test and place all equipment in initial operation and provide training in operation to Owner's personnel.

B. Chlorine Gas Detection System

1. Manufacturer's service engineer to place equipment in operation and perform the testing required to demonstrate proper operation.

C. Replace or remedy to satisfaction of the Engineer any defective materials, equipment, etc.

3.4 MEASUREMENT AND PAYMENT

- A. No separate measurement or direct payment will be made for this Work and all costs for same shall be included in the price bid for the work to which it pertains.

END OF SECTION

SECTION 15600

HEATING, VENTILATING, AND AIR CONDITIONING

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work included: Provide heating, ventilating, and air conditioning systems where shown on the Drawings, as specified herein, and as needed for a complete and proper installation including, but not necessarily limited to.
 - 1. Electric heaters with mounting brackets.
 - 2. Exhaust systems including, but not necessarily limited to, fans, motors, ductwork, grilles, registers, controls and related items.
 - 3. Louvers and dampers.
- B. Related work:
 - 1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplemental Conditions, and Sections in Division 1 of these Specifications.
 - 2. Section 16400 - Electrical

1.2 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- B. Without additional cost to the Owner, provide such other labor and materials as are required to complete the work of this Section in accordance with the requirements of governmental agencies having jurisdiction, regardless of whether such materials and associated labor are called for elsewhere in these Contract Documents.
- C. Provide materials and equipment new and free from flaws and defects of any nature.
- D. Perform all work by skilled mechanics, under competent supervision, employing latest and best practices of the trade.
- E. Install work in accordance with recommendations of ASHRAE Guide and the equipment manufacturer.
 - 1. In the event there is any conflict or doubt, consult Engineer for clarification and approval.

1.3 SUBMITTALS

- A. Comply with pertinent provisions of Section 01340.
- B. Product data: Within 60 calendar days after the Contractor has received the Owner's Notice to Proceed, submit.
 - 1. Materials list of items proposed to be provided under this Section.
 - 2. Manufacturer's specifications and other data needed to prove compliance with the specified requirements.

3. Shop drawings in sufficient detail to show fabrication, installation, anchorage, and interface of the work of this Section with the work of adjacent trades.
4. Manufacturer's recommended installation procedures which, when approved by the Engineer, will become the basis for accepting or rejecting actual installation procedures used on the Work.

C. Samples:

1. When so requested by the Engineer, promptly provide samples of items scheduled to be installed in the final structure.
2. When specifically so requested by the Contractor and approved by the Engineer, approved samples will be returned to the Contractor for installation on the Work.

D. Manual: Upon completion of this portion of the Work and as a condition of its acceptance, deliver to the Engineer two copies of an operation and maintenance manual compiled in accordance with the provisions of Section 01730 of these Specifications. Include within each manual.

1. Copy of the approved Record Documents for this portion of the Work.
2. Copies of all warranties and guaranties.

1.4 PRODUCT HANDLING

- A. Comply with pertinent provisions of Section 01640.

1.5 DRAWINGS

- A. Drawings are diagrammatic and do not indicate all offsets, fittings, and accessories. Examine other drawings, investigate conditions to be encountered and arrange work accordingly, furnishing all fittings, offsets, etc. required, without extra charge.
- B. Drawings show general arrangement of ducts, but do not necessarily show all offsets, etc. required to avoid interferences. Where shape of duct is varied, alter dimensions to provide equal static pressure drop per unit of length.
- C. In case of doubt as to the Drawings or Specifications, call to the Engineer's attention all discrepancies, errors or omissions encountered.
1. Do not proceed in uncertainty.

1.6 PERMITS, LICENSES AND FEES

- A. Heating and ventilating Contractor shall obtain and pay for all permits, licenses, fees and service charges required for execution of this work.

1.7 WARRANTY

- A. Comply with provisions of Section 01650.
- B. Guarantee mechanical systems to operate quietly, safely, and efficiently.

PART 2 - PRODUCTS

2.1 MATERIALS AND WORKMANSHIP

- A. All materials and equipment shall be new and free from flaws and defects of any nature. Materials called for are to be considered as standards of quality, which however, implies no right on the part of the Contractor to substitute other materials and methods without written authority from the Engineer.
- B. All work shall be performed by skilled mechanics, under competent supervision, employing latest and best practices of the trade. Work shall be installed in accordance with recommendations of ASHRAE Guide, and equipment manufacturer. In the event there is any conflict or doubt, consult Engineer for clarification and approval.
- C. The phrase "or equal" shall be construed to mean that material or equipment will be acceptable only when, in the judgment of the Engineer, they are composed of parts of equal quality, or equal workmanship and finish, designed and constructed to perform or accomplish the desired result as efficiently as the indicated brand, pattern, grade, class, make or model. Written approval will be obtained from the Engineer prior to installation.

2.2 ELECTRIC HEATERS

- A. Provide electric heaters of size, type, and capacity matching existing heater to be replaced.
 - 1. Approved manufacturers: Markel.
- B. Units to be complete with built-in contactors, built-in thermostats and accessories as specified on drawings.
- C. Provide wall mounting brackets for each heater.
 - 1. Support from the wall as recommended by the equipment manufacturer and as directed by the Engineer.
 - 2. Provide all supplementary steel, framing members, wall inserts, anchors, etc., as required to properly support each unit heater.
 - 3. Provide seismic restraint devices as recommended by seismic restraint equipment supplier.
- D. Entire heater shall be UL listed.

2.3 VENTILATION EQUIPMENT

- A. Sidewall Exhaust Fans - SWF (centrifugal type):
 - 1. Provide belt driven or direct drive centrifugal type sidewall exhaust fans of sizes and capacities matching existing fans to be replaced.
 - 2. AMCA sound and air performance certified.
 - 3. Provide complete with a spun aluminum housing, 1/2" mesh aluminum bird screen, fan motor with built-in thermal overload protection for each fan motor 1/2 horsepower and smaller, magnetic starter with thermal overload protection of each fan motor 3/4 horsepower and larger, disconnect switch mounted under ventilator cover, wall switch and/or thermostat where indicated on Drawings, gravity automatic aluminum backdraft damper, damper frame, ball or roller type (L50) life bearings

mounted in cast iron pillow blocks with grease fittings, cast iron pulleys with adjustable motor sheaves and drives sized for a minimum of 150% of driven horsepower and other accessories as applicable.

4. Mount the entire fan and motor assembly on vibration isolators to reduce noise transmission.
5. Coat entire exhaust fan, bird screen and backdraft damper with "Hi-Pro Poly" corrosion coating on aluminum surfaces and "Hi-Pro-Z" coating on steel surfaces in colors selected by the Architect.
6. Provide sidewall centrifugal type exhaust fans as manufactured by Greenheck Corp.

B. Louvers:

1. Provide stationary type wall louvers of sizes matching existing louvers to be replaced.
2. Each louver shall be furnished complete with drainable stormproof type stationary blades at 37.5 degree angle on 5-1/8" centers maximum, channel type frame matching the existing installation.
3. 1/2" mesh aluminum bird screen, extruded aluminum construction, and Kynar 500 finish on entire assembly of a color to match the existing louver being replaced.
4. Stationary wall louvers shall be of thickness matching the existing louvers to be replaced.
5. Provide Ruskin Mfg. Co. Model ELF-375DX louvers.

C. Counterbalanced backdraft dampers:

1. Furnish and install with each louver being replaced.
2. Dampers shall be installed in aluminum sleeves on rear of stationary louvers.
3. Counterbalanced backdraft dampers shall be heavy duty dampers with frame constructed of .125" thick extruded aluminum and blades constructed of .07" thick extruded aluminum with vinyl blade edge seals mechanically locked into blade edge.
4. Bearings shall be corrosion resistant synthetic type.
5. Linkage shall be 1/2" wide tie bar connected to stainless steel pivot pins. Damper blades shall have adjustable zinc plated counterbalance bars.
6. Dampers shall be designed for maximum 3500 fpm spot velocity and 2500 fpm maximum system velocity.
7. Backdraft dampers and sleeves shall be provided with a Kynar 500 finish to match louver finish.
8. Counterbalanced backdraft dampers shall be Ruskin Mfg. Co. Model CBD6.
9. Install aluminum expanded metal guards over the rear of the counterbalanced backdraft dampers.
 - a. Expanded metal guards shall be equal to McNichols Co. 1-1/2" #.081 S with an open free area of 85%.
 - b. Expanded metal shall be installed in removable frames for mounting on the rear of louver/damper assemblies and shall be furnished with Kynar 500 finish to match louvers and dampers.

2.4 OTHER MATERIALS

- A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Engineer.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

- A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.2 COORDINATION

- A. Coordinate as required with other trades to assure proper and adequate provision in the work of those trades for interface with the work of this Section. The heating and ventilating Contractor shall be responsible for coordinating any changes due to mechanical equipment substitutions with electrical Contractor and shall bear any additional cost due to such change.

3.3 PREPARATION

- A. Holes in concrete:
 - 1. Provide sleeves, accurately dimensioned and shaped to permit passage of items of this Section.
 - 2. Deliver all such sleeves, with accurate setting drawings and setting information, to the trades providing the surfaces through which such items must penetrate, and in a timely manner to assure inclusion in the Work.
- B. Flashing:
 - 1. Where items of this Section penetrate the roof, outer walls or waterproofing of any kind, provide under this Section all base flashing and counterflashing required at such penetration.

3.4 ELECTRICAL WORK

- A. Electrical work shall be in accordance with Electrical Section 16400 of specifications, the latest National Electrical Code, and in accordance with equipment manufacturer's recommendations.
- B. All power wiring, including final connections to equipment, is included under the section of these Specifications entitled "Electrical". Electrical Contractor will provide magnetic starters in motor control centers for exhaust fans and will wire fans and dampers through thermostats. Heating and ventilating Contractor shall furnish thermostats to electrical Contractor for installation.

3.5 CUTTING AND PATCHING

- A. The general Contractor shall do all cutting, patching and construction of chases within building for this installation. Failure of the heating and ventilating Contractor to advise the general Contractor well in advance of all openings, sleeves, etc. required will result in the heating and ventilating Contractor bearing cost of this phase of the work.

3.6 LABELING OF EQUIPMENT AND PIPING

- A. Permanently label all mechanical items of equipment installed with bakelite or with stainless steel nameplates for identification purposes.
- B. Securely attach nameplates to the respective items of equipment with stainless steel fasteners.

3.7 INSTRUCTIONS

- A. Upon completion of this portion of the work and prior to its acceptance by the Owner, fully instruct the Owner's maintenance personnel in the proper operation and maintenance of items provided under this Section.
- B. Demonstrate the contents of the approved operation and maintenance manual required under Article 1.3 above.

3.8 TESTING AND ADJUSTING

- A. Test and adjust each piece of equipment and each system as required to assure proper balance and operation. Test and regulate ventilation and air conditioning system to conform to the air volumes shown on the approved shop drawings.
- B. Eliminate noise and vibration, and assure proper function of all controls, maintenance of temperature and operation.

3.9 PROJECT COMPLETION

- A. Correct defects in workmanship, materials, equipment and operation of system for a period of one year from date of acceptance. Equipment and materials, repaired and replaced, are guaranteed for one year following date of correction.
- B. Remove any item not specified or given approval and replace it with specified item.
- C. Provide an accompanying note of exception for any item submitted for approval that does not conform to these specifications.
- D. The system as installed shall comply with code requirements.

3.10 MEASUREMENT AND PAYMENT

- A. No separate measurement or direct payment will be made for the items under this Section and all costs for same shall be included in the lump sum price bid for the project.

END OF SECTION

SECTION 16400

ELECTRICAL

PART 1 – GENERAL

1.1 DESCRIPTION

- A. Work included: Provide a complete electrical system as indicated on the Drawings, as specified herein, and as needed for a complete and proper installation including, but not necessarily limited to:
1. Branch circuit wiring, in conduit, for lighting, receptacles, junction boxes and motors.
 2. Hangers, anchors, sleeves, chases, supports for fixtures, and other electrical materials and equipment in association therewith.
 3. Wiring system, in conduit, for equipment and controls provided under other Sections of these Specifications including, but not necessarily limited to, Equipment and Mechanical Sections.
 4. Motor starters and controls for motors provided under the Contract, but for which motor starters and controls are not otherwise provided.
 5. Heaters, fans, air conditioning units and louvers.
 6. Other items and services required to complete the systems whether particularly mentioned or not.
- B. Related work:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
 2. Section 05990 – Miscellaneous Metals.

1.2 ABBREVIATIONS

A	Ampere (Amps)	MCA	Minimum Circuit Amps
AFF	Above Finished Floor	MCC	Motor Control Center
AFG	Above Finished Grade	MCM	1000 Circular Mils (KCMIL)
AHJ	Local Authority Having Jurisdiction	MOCP	Maximum Over-current Protection
AIC	Amps Interrupting Current	N	Neutral
AFCI	Arc-Fault Circuit Interrupter	NEC	2002 National Electrical Code
ANSI	The American National Standards Institute	NEMA	National Electrical Manufacturers Association
BF	Ballast Factor	NFPA	National Fire Protection Association
Bkr.	Breaker	NIC	Not in Contract
C	Conduit	OSHA	Occupational Safety and Health Act
Ckt.	Circuit	PF	Power Factor
CRI	Color Rendering Index	PLC	Programmable Logic Controller
CU	Copper Conductor	PVC	Polyvinyl Chloride Conduit
DETD	Dual Element Time Delay Fuse	RGSC	Rigid Galvanized Steel Conduit
Disc.	Disconnect	RMS	Root Mean Square
Dn	Down	RTU	Remote Terminal Unit
EMT	Electrical Metallic Tubing	SCADA	Supervisory Control and Data Acquisition
FLA	Full Load Amps	SCCR	Short-Circuit Current Rating
FPM	Fuse per Manufacturer Requirements	SPD	Surge Suppression Device
FS	Federal Specifications	Sym	Symmetrical
G or	Ground	THD	Total Harmonic Distortion

Gnd.			
GFCI	Ground-Fault Circuit Interrupter	TSP	Twisted Shielded Pair
GFP	Ground-Fault Protection	TST	Twisted Shielded Triplet
HD	Heavy Duty	TVSS	Transient Voltage Surge Suppressor
HP	Horsepower	UL	Underwriters Laboratories Inc.
IBC	International Building Code	UON	Unless Otherwise Noted
IEEE	The Institute of Electrical and Electronics Engineers	V	Volts
IMC	Intermediate Metallic Conduit	W	Watts
KVA	Kilovolt-Amps	WFC	Watertight Flexible Conduit
KW	Kilo Watt	WG	Wire Guard
KA	Kilo Amps	XFMR	Transformer
LCCF	Lamp Current Crest Factor		

1.3 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section. These shall include, but not be limited to, an electrical supervisor who is a licensed master electrician, a field foreman with a minimum journeyman electrician's license and adequate electricians and helpers.
- B. Without additional cost to the Owner, provide such other labor and materials required to complete the work of this Section in accordance with the requirements of governmental agencies having jurisdiction, regardless of whether such materials and associated labor are called for elsewhere in these Contract Documents.
- C. Electrical subcontractor shall furnish a 100 percent performance bond and a 100 percent payment bond to the Contractor as security for the faithful performance of this Section, as security for the payment of all persons performing labor on the project under this Section and furnishing materials in connection with this Section. The performance bond and payment bond shall be in separate instruments.

1.4 SUBMITTALS

- A. Comply with pertinent provisions of Section 01340.
- B. Product data: Within 60 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:
 1. Materials list of items proposed to be provided under this Section.
 2. Manufacturer's specifications, other data and shop drawings needed to prove compliance with the specified requirements. Provide the following approval drawings:
 - a. Wiring devices and cover plates.
 - b. Conduit and fittings.
 - c. Conductors.
 - d. Motor starters.
 - e. Safety/Disconnect switches.
 - f. Heaters, fans, air conditioning units, and louvers.
 3. Manufacturer's recommended installation procedures which, when approved by the Engineer, will become the basis for accepting or rejecting actual installation procedures used on the Work.
- C. Layouts:

1. In additions to manufacturer's equipment shop drawings, submit electrical installation working drawings containing the following:
 - a. Concealed and buried conduit layouts, shown on floor plans drawn at not less than $\frac{1}{4}" = 1\text{-ft-0-in}$ scale. The layouts shall include locations of process equipment, motor control centers, transformers, panelboards, control panels and equipment, motors, switches, motor starters, large junction or pull boxes, instruments and other electrical devices connected to concealed or buried conduits.
 - b. Plans shall be drawn on high quality reproducible, media, size 22" by 34" and shall be presented in a neat, professional manner.
 - c. Concrete floors and/or walls containing concealed conduits shall not be poured until conduit layouts are approved.

D. Samples:

1. When so requested by the Engineer.
2. When specifically so requested by the Contractor and approved by the Engineer, approved samples will be returned to the Contractor for installation on the Work.

E. Manual: Upon completion of this portion of the Work and as a condition of its acceptance, provide operation and maintenance manuals in accordance with the provisions of Section 01650 of these Specifications. Include within each manual:

1. Copy of the approved Record Documents for this portion of the Work.
2. Copies of all circuit directories.
3. Copies of all warranties and guaranties.

1.5 PRODUCT HANDLING

- A. Comply with pertinent provisions of Section 01640.

1.6 WARRANTY

- A. Provide standard one (1) year warranty on all labor and materials.
- B. Comply with Section 01650.

1.7 RULES AND PERMITS

- A. The entire installation shall be in accordance with the latest edition of the NEC, OSHA, and all local codes.
- B. Apply and pay for all permits and inspections required by local or state laws.
- C. Furnish the Owner with certificate of inspection and final approval from all authorities having jurisdiction.

1.8 DRAWINGS

- A. The drawings and specifications are complementary to each other and what is called for by one shall be as binding as if called for by both. The drawings are diagrammatic and are to be followed as closely as the construction will permit.
- B. The drawings show the general location of outlets, conduits and circuit arrangement. Because of the small scale of the drawings, it is not possible to indicate all of the detail involved. The Contractor shall carefully investigate the structural and finish conditions affecting all his Work and shall arrange such work

accordingly, furnishing such fittings, junction boxes and accessories as may be required to meet such conditions.

1.9 ELECTRICAL SERVICE

- A. From the utility company, establish requirements for transformer pad(s), metering, connections, etc., and make provisions for them; providing and installing all lugs, connectors, grounding, etc., required for a complete installation.
 - 1. Coordinate work with both the electric utility company and the Owner, and schedule the installation of the service in accordance with the construction schedule such that there will be no delays in equipment startup and placing the facilities in operation.

1.10 ELECTRICAL OUTAGE

- A. Coordinate all outages with the Owner, 72 hours prior. Schedule all outages such that they will not interfere with normal plant operation and that there will be no delays in equipment startup and placing the facilities in operation.

PART 2 – PRODUCTS

2.1 GENERAL

- A. Provide only materials that are new, of the type and quality specified. Where Underwriters' Laboratories, Inc. have established standards for such materials, provide only materials bearing the UL label. Materials called for are to be considered as standard that, however, implies no right on the part of the Contractor to substitute other materials and methods without written authority from the Engineer.
- B. Temporary power:
 - 1. In addition to providing temporary power as described in Section 01500 of these Specifications, provide and pay the costs for installing permanent electrical meter or meters.
 - 2. When all equipment is in place and connected, and the Engineer determines the project is ready for final checkout, arrange to have the permanent metering installed in the Owner's name. At this point, the Owner will be responsible for all charges.
- C. Where any material or operation is specified by reference to published specifications or standards or the specifications or standards of any other organization; the referenced specification or standard shall be as much a part of this Section as if quoted in full herein.

2.2 RACEWAYS

- A. Applicable Standards:
 - 1. ANSI C80.1: Rigid Steel Conduits, Zinc-Coated.
 - 2. ANSI C80.3: Electrical Metallic Tubing, Zinc Coated.
 - 3. ANSI C80.5: Rigid Aluminum Conduits.
 - 4. ANSI C80.6: Intermediate Metallic Conduits.
 - 5. ANSI/NEMA FB1: Fittings and Supports for Conduit and Cable Assemblies.
 - 6. UL 6: Rigid Steel Conduit – Zinc Coated.
 - 7. UL 651-2002: Schedule 40 PVC and schedule 80 Rigid PVC Conduit.
 - 8. UL 514B: Flexible conduit fittings.

9. NEMA RN 1: Polyvinyl-Chloride (PVC) Externally Coated Galvanized Rigid Steel Conduit and Intermediate Metal Conduit.
 10. NEMA FB 1: Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing and Cable.
 11. ASTM F512: Polyvinyl Chloride (PVC) Conduit.
 12. ASTM D870: Standard Practice for Testing Water Resistance of Coatings Using Water Immersion.
 13. ASTM D1151: Standard Practice for Effect of Moisture and Temperature on Adhesive Bonds.
 14. FS WW-C 581E: Federal Specification for Rigid Galvanized Steel Conduit.
 15. FS-WW-C-563A: Federal Specification for Electrical Metallic Tubing.
 16. FS-WW-C-540C: Federal Specification for Rigid Aluminum Conduit.
 17. FS WW-C 566: Federal Specification for Flexible Metal Conduit.
- B. Acceptable Manufacturers:
1. Wheatland.
 2. Allied Tube.
 3. Perma-Cote; Division of Robroy.
 4. Ocal.
 5. Carlon.
- C. Provide conduit and fittings conforming to the above standards.
- D. Rigid galvanized steel conduit and fittings – types:
1. Provide threaded type fittings and form 8 conduit bodies with material to match conduit. Provide PVC coated fittings for PVC coated rigid galvanized steel conduit installations.
 2. Provide rigid galvanized steel conduit with external 40-mil PVC coating and internal, 2-mil urethane surface.
 3. Provide seal fittings for rigid galvanized steel conduit where indicated on the plans equal to Crouse-Hinds series EYSX. Provide PVC coated seal fittings for PVC coated rigid galvanized steel conduit installations.
 4. Provide sealing compound and fiber by Crouse-Hinds or approved equal:
 - a. Sealing Compound: Chico A.
 - b. Sealing Fiber: Chico X.
 5. Provide USA manufactured base materials for PVC coated fittings, hangers, straps, etc.
- E. Provide hot-dipped, galvanized, watertight type fittings for liquid tight flexible conduit as manufactured by O-Z/Gedney or approved equal. Provide PVC coated fittings for PVC coated rigid galvanized steel conduit installations.
- F. Conduit/Cable supports – properties:
1. Provide 316 stainless steel supports for all exposed metallic conduit as manufactured by Unistrut or approved equal.
 2. Provide fiberglass supports for all exposed non-metallic conduit/cable as manufactured by Aickinstrut or approved equal.
 3. Provide one-hole, PVC coated, malleable iron conduit straps with back spacer for all PVC coated rigid galvanized steel conduit.
 4. Provide PVC coated beam clamps with uncoated 316 stainless steel nuts and bolts for all PVC coated rigid galvanized steel conduit.
- G. All conduits to conform to the following specifications:
1. Installations under concrete slab: Rigid galvanized steel with PVC coating.
 2. Exposed outdoor locations: Rigid galvanized steel with PVC coating.

3. Interior locations: Rigid galvanized steel with PVC coating.
4. Installations in concrete-encased duct banks: Schedule 40 PVC.
5. Installations underground exposed to earth: Rigid galvanized steel with PVC Coating.

2.3 CONDUCTORS

A. Applicable standards:

1. NEMA WC 3: Rubber-Insulated Wire and Cable for the Transmission and Distribution of Electrical Energy.
2. NEMA WC 5: Thermoplastic-Insulated Wire and Cable for the Transmission and Distribution of Electrical Energy.
3. UL 44 – 2002: Rubber-Insulated Wires and Cables.
4. UL 83 – 1999: Thermoplastic-Insulated Wires and Cables.
5. UL 854 – 2002: Service Entrance Cables.

B. Acceptable Manufacturers:

1. Okonite.
2. Pirelli.
3. Southwire.
4. Superior Essex.
5. Belden.

C. Conductor types:

1. Low voltage conductors (0 to 600V):
 - a. For secondary service entrance, feeders, underground, under floor, in damp or wet locations, and to any process associated equipment provide copper, 600V, 75°C, Type RHH-RHW-USE.
 - b. For all other low voltage conductors, provide copper, 600V, 75°C, Type THWN.
 - c. Provide stranded conductors for sizes #12 and larger.
 - d. Provide same type of equipment grounding conductors as specified above.
 - e. Provide all branch circuit wiring installed within ballast compartment of light fixtures rated 90°C, Type THHN.
 - f. Analog Control/Communications (TSP or TST) – Provide tinned copper, polyethylene insulated, twisted pair or triplet, aluminum-polyester, overall shield with 20-gauge drain.
 - g. Provide analog signal conductors sized as shown on drawings with minimum size of 18-gauge.
 - h. For all discrete signal conductors, provide copper stranded, 600V, Type THWN with a minimum size of #14, unless otherwise noted.
 - i. For all control conductors installed in underground conduits provide cable listed as suitable for direct burial.
2. Splices, Connections and Terminations (0 to 600V):
 - a. For #8 AWG, use solderless pressure connectors with insulating covers for copper wire splices and taps. Use insulated spring wire connectors with plastic caps for #10 AWG and smaller.
 - b. Use insulated, mechanical connectors for copper wire splices and taps, #6AWG and larger, ILSCO or approved equal. Tape connectors with electrical tape to prevent moisture infiltration.

2.4 GROUNDING AND BONDING

A. Applicable standards:

1. UL 467-1998: Grounding and Bonding Equipment.
2. NFPA 70: National Electrical Code.
3. ANSI/IEEE 32: Requirements, Terms and Test Procedures for Neutral Grounding Devices.
4. IEEE 80: Guide for Safety in Substation Grounding.
5. IEEE 81: Guide for Measuring Earth Resistivity, Ground Impedance, and Earth Surface Potentials of a Ground System.
6. NETA ATS: Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems (International Electrical Testing Associates).

B. Grounding electrodes (Rod type):

1. Acceptable Manufacturers:
 - a. LTV Copperweld.
 - b. Line Material.
2. Material: Copper-clad steel.
3. Diameter: $\frac{3}{4}$ "
4. Length: 10'-0"
5. Type: Sectional.

C. Mechanical connectors:

1. Acceptable Manufacturers:
 - a. Burndy.
 - b. Robbins.
 - c. Harger.
2. Material: Bronze.

D. Exothermically-welded connections:

1. Acceptable Manufacturers:
 - a. Cadweld.

E. Grounding Electrode Conductor:

1. Material: Bare, soft-drawn, stranded, copper.
2. Minimum size: Meet NFPA 70 requirements.

F. Bonding Material:

1. Material: Bare, soft-drawn, stranded, copper.
2. Minimum size: Meet NFPA 70 requirements.

G. Regulatory requirements:

1. Products: Listed and classified by UL as suitable for the purpose specified and indicated.

H. Ground Access Wells:

1. Provide 12"x12"x12" polymer concrete ground access well where indicated on plans.
2. Provide engraved cover with "ground" indicator.
3. Rated for a minimum of 20,000 lbs.
4. Provide Harger GAW series or approved equal.

- I. Provide Ground-Fault Protection of service entrance disconnects 1000 amperes or more at 277/480V per NFPA 70 Part 230-95. Refer to plans for additional locations or requirements.

2.5 OUTLET BOXES

A. Applicable standards:

1. ANSI/NEMA OS 1: Sheet-steel Outlet Boxes, Device Boxes, Covers and Box Supports.
2. ANSI/NEMA OS 2: Nonmetallic Outlet Boxes, Device Boxes, Covers and Box Supports.
3. NEMA 250: Enclosures for Electrical Equipment (1000 Volts Maximum).
4. NEMA FB 1: Type FD, Cast Ferroalloy Boxes.
5. UL 508: UL Standard for Safety Industrial Control Equipment.

B. Types and properties:

1. Outlet boxes:
 - a. Sheet metal outlet boxes (ANSI/NEMA OS1; galvanized steel, with 1/2" male fixture studs where required).
 - b. Nonmetallic outlet boxes (ANSI/NEMA OS2).
 - c. Cast boxes (NEMA FB1; deep type, gasketed cover, threaded hubs).

C. Pull and junction boxes:

1. Sheet metal boxes:
 - a. Indoor location installations:
 - 1) Provide the type specified in ANSI/NEMA OS1, 316 stainless steel unless stated otherwise on drawings.
 - 2) Provide hinged-type enclosure for enclosures larger than 12 inches in any dimension.
 - b. Indoor location installations: Provide hinged-type enclosure for enclosures larger than 12 inches in any dimension.
2. Cast aluminum boxes:
 - a. Outdoor and wet location installations: Conform to NEMA 250; Type 4 and Type 6, flat-flanged, surface-mounted junction box, UL listed as rain tight, cast aluminum box cover with ground flange, neoprene gasket, and stainless steel cover screws as manufactured by Cooper Crouse-Hinds.
3. Non-metallic boxes:
 - a. Above ground location installations: Conform to UL 508, NEMA type as shown on drawings, molded fiberglass polyester, with removable hinged cover, neoprene gasket, and stainless steel cover screws as manufactured by Hoffman.
 - b. In Ground location installations: Conform to UL 508, NEMA type as shown on drawings, pre-cast polymer concrete, with removable, heavy-duty bolted cover, and stainless steel cover screws as manufactured by Strongwell.

D. Outlet box schedule, unless otherwise noted:

1. Interior boxes:
 - a. Galvanized extensions and rings.
 - b. Ganged where two or more devices occur at the same location.
 - c. One-piece type.
 - d. Studs for lighting fixtures, when required.
 - e. Lugs or ears to secure covers or plaster rings.
 - f. As required, covers or plaster rings.

- g. Small exposed boxes - galvanized cast type with hubs.
- h. Large exposed and exterior boxes - NEMA 4X type.
- 2. Ceiling boxes, minimum 4"x 4" x 2-1/8" deep, or 4" octagon x 2-1/8" deep, of one-piece construction, except where otherwise specified herein or when larger size is required by code.
- 3. Provide masonry type boxes in block walls.
- 4. Provide concrete type in poured slabs.
- 5. Provide non-metallic boxes for underground installations.

E. Box locations:

- 1. Provide electrical boxes as shown on Drawings, and as required for splices, taps, wire pulling, equipment connections, and code compliance.
 - a. Electrical box locations shown on Contract Drawings are approximate unless dimensioned.
 - b. Verify the location of all boxes and outlets prior to rough in.
 - c. Locate the boxes to allow access.
 - d. Locate and install boxes such that headroom is maintained and a neat appearance is presented.

2.6 WIRING DEVICES

A. Applicable standards:

- 1. FS W-C-596: Electrical Power Connector, Plug, Receptacle, and Cable Outlet.
- 2. FS W-S-896: Switch, Toggle.
- 3. NEMA WD 1: General Purpose Wiring Devices.
- 4. NEMA WD 2: Semiconductor Dimmers for Incandescent Lamps.
- 5. NEMA WD 5: Specific Purpose Wiring Devices.
- 6. UL 943: Standard for Ground Fault Circuit Interrupters.

B. Acceptable Manufacturers:

- 1. Hubbell.
- 2. Pass and Seymour.
- 3. General Electric.
- 4. TayMac.
- 5. Lutron.
- 6. Leviton.

C. Wall Switches:

- 1. Provide wall switches for lighting circuits and motor loads under 1/2 HP conforming to NEMA WD; FS W-S-896; AC-general use snap switch with toggle handle, rated 20 amperes and 120-277VAC.
- 2. Provide switch with gray handle.
- 3. For exterior applications, provide cast box and weatherproof actuating lever toggle switch cover.

D. Receptacles:

- 1. Provide convenience and straight-blade receptacles conforming to NEMA WD 1, locking blade receptacles conforming to NEMA WD 5, and convenience receptacle configuration conforming to NEMA WD 1; Type 5-20, gray plastic face.
- 2. Provide specific-use receptacle configuration conforming to NEMA WD 1 type as indicated on the drawings, and with a brown plastic face.

3. Provide GFCI duplex convenience receptacles with integral ground fault current interrupters and gray plastic face.

E. Wall Plates:

1. Provide type 304 stainless steel oversized (jumbo) interior wall plates.
2. Provide continuous-use rated exterior device cover. Provide cover constructed entirely of UV stabilized high impact polycarbonate material with gasket, stainless steel mounting screws and UL listed for wet location continuous-use. Provide cover equal to TayMac Specification Grade series.
3. Design plates to fit the device or devices on which they are used.

2.7 DISCONNECT/SAFETY SWITCHES

A. Applicable standards:

1. ANSI/UL 198C: High intensity capacity fuses; current limiting types.
2. ANSI/UL 198E: Class R fuses.
3. FS W-F-870: Fuse holders (for plug and enclosed cartridge fuses).
4. FS W-S-865: Switch, box (enclosed), surface-mounted.
5. NEMA KS 1: Enclosed switches.

B. Acceptable manufacturers – disconnect/safety switches:

1. General Electric.
2. Square D.
3. Cutler-Hammer.
4. Siemens Energy & Automation.

C. Disconnect/Safety Switches:

1. Fusible (safety) switch assemblies: NEMA KS 1; type HD, quick-make, quick-break, load interrupter enclosed knife switch with externally operable handle interlocked to prevent opening front cover with switch in ON position.
 - a. Provide override screw to permit opening front cover with switch in ON position.
 - b. Provide the handle lockable in OFF position.
 - c. Provide fuse clips designed to accommodate Class R fuses.
 - d. Provide enclosure types as indicated on Drawings.
2. Non-fusible (disconnect) switch assemblies: NEMA KS 1; type HD; quick-make, quick-break, load interrupter enclosed knife switch with externally operable handle interlocked to prevent opening front cover with switch in ON position.
 - a. Provide override screw to permit opening front cover with switch in ON position.
 - b. Provide the handle lockable in OFF position.
 - c. Provide enclosure types as indicated on Drawings.

D. Fuses:

1. Fuses 600 Amperes and Less: Current limiting type.
2. Fuse Interrupting Rating: 200,000 RMS symmetrical amperes.

E. Acceptable manufacturers - fuses:

1. Gould-Shawmut.
2. Bussman.

- F. XXX/Y/ZZ/fAAA: Indicates device or equipment shall be supplied with a disconnect/safety switch. "XXX" indicates frame size; "Y" indicates number of poles; "ZZ" indicates enclosure NEMA rating ("3R" = NEMA 3R, "4X" = NEMA 4X); and "fAAA" indicates fuse size ("FPM" = fuse per manufacturer requirements), no text indicates non-fused disconnect switch.

2.8 ENCLOSED CIRCUIT BREAKERS

A. Applicable standards:

1. FS W-C-375: Circuit Breakers, Molded Case, Branch Circuit and Service.
2. NEMA AB 1-93: Molded Case Circuit Breakers and Molded Case Switches.
3. UL-489: Molded Case Circuit Breakers and Circuit Breaker Enclosures.
4. UL-50: Cabinets and Boxes.
5. NEMA-250: Enclosures for Electrical Equipment.

B. Acceptable manufacturers:

1. General Electric.
2. Square D.
3. Cutler-Hammer.
4. Siemens Energy & Automation.

C. Enclosed Circuit Breakers:

1. Enclosed Molded-Case Circuit Breaker: NEMA AB 1, lockable handle. Handle lockable in OFF position. Provide enclosures type as indicated on Drawings.
2. Provide frame size, trip rating, number of poles, and auxiliary devices as indicated, interrupting capacity rating to meet available fault current, 35,000 RMS symmetrical amperes minimum, with appropriate listing when utilized for switching fluorescent lighting, heating, air-conditioning and refrigeration equipment.
3. Provide shunt-trip where indicated, 120V, 60Hz.
4. Provide interchangeable trip units, on circuit breakers 200 amps and larger, with trip units interchangeable within frame size.

2.9 MOTOR CONTROLLERS

A. Motor starter designations:

1. FVNR: Full Voltage Non-reversing (default type if none shown).
2. FVR: Full Voltage Reversing.
3. RVSS: Reduced Voltage Solid State.
4. RVAT: Reduced Voltage Auto Transformer.

B. Provide each combination motor starter with magnetic circuit protection (MCP), rated for 65,000 AIC symmetrical at 480V.

C. Provide FVNR, FVR, RVAT, and RVSS motor starters as 600V, NEMA-type, electrically operated, electrically held, three-pole assemblies with arc extinguishing characteristics and silver-to-silver renewable contacts.

D. Make provisions for a total of eight (8) NO or NC auxiliary contacts.

E. Provide each starter with a time delay relay adjustable from 0 to 3 minutes, 6-digit running time meter, a fused control power transformer, two (2) indicating lights (one red for running, green for ready), HOA selector switch, and two (2) NO contacts, unless otherwise scheduled on the drawings.

- F. Provide device panel with space to accommodate six (6) oil-tight pilot-control devices or indicating ammeters, voltmeters, or elapsed time meters.
- G. Provide ambient compensated type overload protection for starters in NEMA 3R or 4X outdoor enclosures.
- H. Provide thermal bimetallic ambient compensated type overload relay assembly, unless indicated otherwise.
- I. Provide the overload relay with built-in push-to-test button, electrically isolated NO-NC contacts and single-phase sensitivity.
- J. RVSS
 - 1. Equip each RVSS combination motor starter with built-in electronic overload protection, phase loss/phase imbalance and phase reversal sensing.
 - 2. Provide adequate inputs/outputs for start/stop control and run indication.
 - 3. Provide paralleling run bypass contactor that energizes when the motor reaches 90% of full speed and closes/opens under one (1) times the motor current contacts.
- K. For motor controllers housed in separate enclosure, provide 30mm heavy-duty pilot lights, push buttons, switches, etc.
- L. Provide NEMA rated, FVNR, combination motor starters for motors 25HP and less and NEMA rated, reduced voltage, combination motor starters, type as shown, for motors greater than 25HP.

2.10 MISCELLANEOUS MATERIALS

- A. Provide support framing, channel and associated accessories of 316 stainless steel conforming to the Drawings and to Sections 05990 and 06800 of these specifications, except in areas containing chemicals, whereby fiberglass reinforced plastic only shall be utilized.
- B. Provide and install equipment racks for panels as shown on the drawings and as described in the specifications, with the following as a minimum:
 - 1. Provide cross members consisting of two (2) horizontal pieces of pre-drilled 1-1/2" x 1-1/2" mounting channel, manufactured by Kindorff.
 - 2. Attach all struts with spring-loaded nuts and associated hardware provided by manufacturer of strut, and specifically designed for this purpose.
 - 3. Use 316 stainless steel stud nuts, manufactured by Kindorff.
 - 4. Support the mounting channel "cross bars" vertically by C-channels, 3" x 2" x 8'.
 - 5. Mount channels a maximum of 24" apart, center-to-center, quantity as required to accommodate equipment.
 - 6. Provide a foundation buried 36" underground and secured with 3000 PSI concrete pad, sized as shown on plans with a minimum of 36" clear walking space in front of control panels and 12" on sides and rear of panel.
 - 7. Provide 3/4" chamfer on all concrete edges.
- C. Provide 316 stainless steel (bolts, nuts, washers, U-bolts, anchors, threaded rods, etc.) attachment hardware.

PART 3 – EXECUTION

3.1 SURFACE CONDITIONS

- A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.2 PREPARATION

- A. Coordination:
 - 1. Coordinate as necessary with other trades to assure proper and adequate provision in the work of those trades for interface with the work of this Section.
 - 2. Coordinate the installation of electrical items with the schedule for work of other trades to prevent unnecessary delays in the total Work.
 - 3. Where lighting fixtures and other electrical items are shown in conflict with locations of structural members and mechanical or other equipment, provide required supports and wiring to clear the encroachment.
- B. Data indicated on the Drawings and in these Specifications are as exact as could be secured, but their absolute accuracy is not warranted. The exact locations, distances, levels, and other conditions will be governed by actual construction and the Drawings and Specifications should be used only for guidance in such regard.
- C. Where outlets are not specifically located on the Drawings, locate as determined in the field by the Engineer. Where outlets are installed without such specific direction, relocate as directed by the Engineer and at no additional cost to the Owner.
- D. Verify all measurements at the building. No extra compensation will be allowed because of differences between work shown on the Drawings and actual measurements at the site of construction.
- E. Branch circuit wiring and arrangement of home runs have been designed for maximum economy consistent with adequate sizing for voltage drops and other considerations. Install the wiring with circuits arranged exactly as shown on the Drawings, except as otherwise approved in advance by the Engineer.

3.3 ELECTRICAL SERVICE

- A. Verify location of utility transformer pad and install per utility company specifications, providing all materials and labor required for a complete installation. Verify location of utility company secondary delivery point and report any discrepancies to the Engineer immediately.

3.4 TRENCHING AND BACKFILLING

- A. Perform trenching and backfilling associated with the work of this Section in strict accordance with the provisions of Section 02221 of these Specifications.

3.5 CONDUCTORS

- A. Install no conductor smaller than #12 AWG unless otherwise indicated.
- B. Provide copper conductors.
- C. Provide conductors as shown on the plans or as specified herein.

- D. Provide continuous wiring from outlet to outlet, identified by color and marked with size, grade and manufacturer.
- E. Provide continuous wiring without joints, through pull boxes.
- F. Provide minimum of #10 AWG conductors on branch circuits, which exceed 100' at 120 volts and 200' at 277 volts from panel to load center.
- G. Terminate #14 AWG stranded conductors where indicated for control, using insulated compression-type spade lugs.
- H. Terminate #12 AWG stranded conductors using insulated compression-type spade lugs.
- I. Install an equal number of conductors for each phase of a circuit in the same raceway or cable.
- J. The conductor lengths for parallel circuits must be made equal.
- K. Neatly train and lace all wiring inside boxes, equipment, and panel boards.
- L. Connect circuits sharing a common neutral to different phases regardless of the numbering.
- M. Provide phase, neutral, and ground conductors as required to accommodate metering installed. Any additional conductors required for meter to function properly shall be installed at the Contractor's expense.

3.6 COLOR CODE AND MARKERS

- A. Provide color-coding for #12 and #10 conductors as follows:

	277/480-Volt	120/208(240)-Volt
Phase "A"	Brown	Black
Phase "B"	Orange	Red
Phase "C"	Yellow	Blue
Neutral	White with Tracer	White
Ground	Green	Green

Mark all conductors #8 and larger and all feeders with plastic tape to match the above color-coding.

- B. Mark all 480-volt equipment with red laminated plastic nameplates having one-half inch (1/2") engraved lettering, reading "DANGER 480-VOLTS". Attach plate to equipment with stainless steel screws.
- C. Mark conductors within panelboards with self-sticking label bearing the number corresponding to the circuit number on the drawings. Connect these conductors to corresponding breaker in panel. Mark circuit numbers in outlet boxes only where color-coding is repeated by having two or more conductors of the same color.
- D. Mark equipment, panelboards, cabinets, control devices, starters, switches, etc. by means of black, white core laminated nameplates having 1/4" engraved lettering. Provide designations as indicated on the drawings. Attach plates to equipment with stainless steel screws.

3.7 SPLICES, CONNECTIONS, AND TERMINATIONS IN 600V. CONDUCTORS

- A. Provide final connections and/or terminations for all wiring indicated on the electrical drawings and in this division of the specifications. Equipment supplied under other divisions of the specifications that require electrical connections under this division shall be provided with Engineer approved wiring and termination diagrams.
- B. Splice only in accessible junction boxes.
- C. Thoroughly clean wires before installing lugs and connectors.
- D. Terminate spare conductors with electrical tape.

3.8 RACEWAYS AND FITTINGS

- A. When PVC coated conduit systems are utilized, the raceway manufacturer prior to installation shall certify the Contractor. Submit certification to the Engineer in writing.
- B. When PVC coated conduit systems are utilized, provide inspection and certification of the complete raceway installation in writing by an authorized representative of the PVC coated materials supplier.
 - 1. During the construction process, at regular intervals, and prior to any raceway being covered, the representative shall inspect the system until it is confirmed that it meets the manufacturer's intended requirements.
 - 2. Remove and reinstall any portion of the conduit installation that does not meet the intended installation methods at no additional cost to the Owner.
- C. Provide certification to insure that all PVC overlapping connections, conduit threading, thread coating, sealing, etc., has been performed in accordance with manufacturer's recommended procedures.
- D. Apply cold galvanizing compound to all field-cut threads prior to installation.
- E. In general, follow the raceway installation layout shown on the plans, however, this layout is diagrammatic only, and where changes are necessary due to structural conditions, other apparatus or other causes, make such changes without any additional cost to the Owner.
- F. Cut all conduits square using a saw or pipe cutter and de-burr cut ends.
- G. Install the conduit to the shoulder of fittings and couplings and fastened securely.
- H. Use conduit hubs, or sealing locknuts, for fastening conduit to cast boxes and for fastening conduit to sheet metal boxes in damp or wet locations.
- I. No more than the equivalent of three 90-degree bends may be installed between boxes.
- J. Use conduit bodies to make sharp changes in direction, as around beams.
- K. Use hydraulic one-shot conduit bender or factory elbows for bends in conduit larger than 2" size.
- L. Avoid Moisture traps where possible; where moisture traps are unavoidable, there must be a junction box with drain fitting provided at the conduit low point. Use suitable conduit caps to protect installed conduit against entrance of dirt, concrete, plaster, mortar, and moisture.

- M. Size all conduits for conductor type installed with $\frac{3}{4}$ " being the minimum size conduit allowed.
- N. Arrange conduit to maintain headroom and present a neat appearance.
- O. Route any exposed conduit and conduit above accessible ceilings parallel and perpendicular to walls and adjacent piping.
- P. Provide at all times a minimum of 6" clearance between conduit and piping and a 12" clearance between conduit and heat sources such as flues, steam pipes, and heating appliances.
- Q. Arrange all conduit supports to prevent distortion of alignment by conductor pulling operations.
- R. Fasten conduits above finished ceilings using straps, lay-in adjustable hangers, clevis hangers or bolted split stamped hangers.
 - 1. Do not fasten conduit with wire or perforated pipe straps. All wire that was used for temporary conduit support during construction must be removed before conductors are pulled.
 - 2. All conduits must be supported at a maximum distance of 5' on centers.
- S. Group conduits in parallel runs where practical using a conduit rack.
- T. Make all underground conduit joints watertight by applying manufacturer's recommended thread compound. Thread compound must be conductive and be compatible with conduit and conductor-jacket material.
- U. Provide suitable pull string or #12 AWG insulated conductor in empty conduit, except sleeves and nipples.
- V. Maintain minimum 12" clearance between all conduits containing signal circuits and conduits containing power circuits.
- W. Install expansion-deflection joints where conduit crosses building expansion or seismic joints.
- X. Where conduit penetrates fire-rated walls and floors, the opening around the conduit must be sealed with UL listed foamed silicone elastomer compound.
- Y. Install exposed raceways either parallel or perpendicular to building walls.
- Z. Install raceways exposed on walls or free standing perpendicular to the floor.
- AA. Install exposed raceways on channel so as to provide a minimum spacing of $\frac{1}{2}$ " between raceway and the surface to which it is mounted.
- BB. Bends:
 - 1. Where emerging from walls, ceilings, floor or concrete slabs, all conduit bends shall be made entirely within the structure (i.e.: the conduit shall emerge perpendicular to the surface and the bend shall be covered).
 - 2. Make all 90-degree conduit turns with factory-bent, rigid galvanized steel, long radius elbows.
 - 3. Utilize rigid galvanized steel, long radius elbows on all 90 degree conduit bends of 2" and larger.

- CC. Install no metal conduit in contact with the earth or concrete slab unless protected with PVC coating.
- DD. Provide necessary sleeves and chases where conduits pass through floors and walls, and provide other necessary openings and spaces, arranging for in proper time to prevent unnecessary cutting in connection with the Work.
- EE. Perform cutting and patching in accordance with the provisions for the original Work.
- FF. Refer to Section 02221 for minimum cover of underground conduits.
- GG. Sealing Conduit:
 - 1. Install watertight conduit hubs on all conduits terminating in the top or sides of NEMA 3R, 4 or 4X enclosures.
 - 2. Use a sealing locknut having an integral gasket on conduits terminating in the bottom of NEMA 3R, 4 or 4X enclosures.
 - 3. Seal all conduits terminating in NEMA 3R, 4 or 4X enclosures with duct seal.
 - 4. Seal watertight all conduits terminating in NEMA 6 or watertight rated enclosures.
 - 5. Install sealing compound and fiber, per manufacturer's recommendation, in hazardous location conduit sealing fittings. Tighten plugs per manufacturer's recommended torque.
- HH. Make motor lead connections and connections to other electrical equipment subject to vibration, or where indicated with flexible weatherproof type steel core conduit with wrapping and cover, factory assembled.
- II. Conduit installations in hazardous locations as defined by Article 500 of the NEC must conform to the special requirements of Articles 501, 502, and 503 of the NEC.
- JJ. Chapter 9 of the NEC shall apply unless larger raceways are specified.
- KK. Ensure all threads are fully installed into fittings, boxes, enclosures and equipment per NEC and UL listing requirements to provide mechanical integrity, grounding and sealing. Provide fittings and adapters to ensure full length of conduit or conduit fitting threads are installed per code and listing requirements.
- LL. Liquidtight flexible metal conduit shall be supported and securely fastened within 12 inches of each box, cabinet, conduit body or other conduit body termination and shall be supported and secured at intervals not to exceed 4-1/2 feet. Flexible metal conduit shall not exceed 6 feet in length except for luminaire connections as allowed per the NEC.

3.9 CONDUIT SUPPORTS

- A. Seal all ends of non-metallic conduit support with manufacturer's recommended sealer.
- B. Provide UL listed vinyl end caps for all ends of strut-type metallic conduit supports.
- C. Provide all miscellaneous materials and supports as required by the NEC and these specifications to provide support for conduits, raceways, boxes, fittings and equipment.

3.10 GROUNDING AND BONDING

- A. Ground and bond the electrical system and motors in accordance with Article 250 of the NEC.
- B. Install electric bond around panels, cabinets, pull boxes, enclosures, etc., to incoming and outgoing sub-feed raceways by use of grounding type bushings.
- C. Install rod electrodes at locations indicated. Install additional rod electrodes as required to achieve specified resistance to ground.
- D. Provide grounding electrode conductor(s) and connect as shown on drawings.
- E. Bond together metal siding not attached to grounded structure; bond to ground.
- F. Provide separate, insulated, green equipment grounding conductor within each feeder and branch circuit raceway. Terminate each end on suitable lug, bus, or bushing.
- G. Provide grounding type bushings for conduits 1" or larger and bond to ground bar or lug of enclosure.
- H. Bond neutral and ground at service entrance only.
- I. Provide exothermic-type weld grounding connections that are buried or otherwise normally inaccessible, and excepting specifically those connections for which access is required for periodic testing.
- J. Make each grounding connection strictly in accordance with the manufacturer's written instructions. Failure to follow manufacturer's written instructions shall result in immediate rejection.
- K. Welds which have "puffed up" or which show convex surfaces, indicating improper cleaning, are not acceptable. Provide grounding connection devices compatible with the conductor(s) and/or rods being joined.
- L. Maximum acceptable resistance to earth ground is 25 Ohms. Provide testing of the service entrance system ground and verify the resistance to earth ground is within the specified requirements. If the existing service entrance ground does not meet the specified requirements, install additional rod electrodes as required to achieve specified resistance to ground.

3.11 POWER EQUIPMENT

- A. Provide power and control wiring for motor starters and safety switches as shown on the Drawings.
- B. Connections to miscellaneous building equipment:
 - 1. Wire to, and connect to, all items of building equipment not specifically described but to which electrical power is required.
 - 2. Coordinate as necessary with other trades and suppliers to verify types, numbers, and locations of equipment.

3.12 MOUNTING OF ELECTRICAL EQUIPMENT

- A. Install all equipment per the manufacturer's recommendations and the contract drawings.
- B. Install disconnect switches with centerline at 48" above finished floor, grade, etc. unless otherwise noted.

- C. Secure disconnect switches to channel frames with spring-type fasteners and hardware intended for this specific use where wall mounted, unless otherwise indicated.
- D. Mount floor and wall mounted equipment utilizing Type 316 stainless steel anchors and fasteners of the size and number recommended by the manufacturer.
- E. Provide necessary hardware to secure the assembly in place.
- F. Provide 316 stainless steel fasteners for all other installation types.
- G. Install and check all equipment in accordance with the manufacturer's recommendations.

3.13 UNIT RESPONSIBILITY

- A. Relays, switches, starters, etc. furnished under this Section of the specifications shall be supplied by the same manufacturer so as to give unit responsibility and ease of maintenance.

3.14 HEATING, VENTILATING AND AIR CONDITIONING

- A. Provide all power wiring for the plumbing, heating, ventilating and A.C. systems as shown on the drawings and according to an approved wiring diagram furnished by the Mechanical Contractor.
- B. Control and interlock wiring shall be provided under other sections of these specifications, including conduit and outlet boxes required, except as specifically indicated on electrical drawings.
- C. Make all connections to equipment required for proper operation.
- D. Consult the mechanical drawings in detail for exact locations of all equipment.

3.15 TESTING AND INSPECTION

- A. Provide personnel and equipment, make required tests, and secure required approvals from the Engineer and governmental agencies having jurisdiction.
- B. Provide written notice to the Engineer adequately in advance of each of the following stages of construction:
 - 1. In the underground condition prior to placing concrete floor slab, when all associated electrical work is in place.
 - 2. When all rough-in is complete, but not covered.
 - 3. At completion of the work of this Section.
- C. When material and/or workmanship are found to not comply with the specified requirements, replace items within three days after receipt of notice at no additional cost to the Owner.
- D. Provide a qualified field serviceman, representing the manufacturer of each piece of major electrical equipment, to make proper and complete adjustments of all adjustable devices, load switches, etc. after final installation and completion of all field wiring. Verify and approve all connections prior to any initial or test operation of equipment. Submit confirmation in writing by the manufacturer's authorized representative of said services to the Engineer.

3.16 HAZARDOUS LOCATIONS

- A. Wiring and equipment in hazardous locations, as defined by the NEC, shall conform to the special requirements of the NEC, unless otherwise indicated or specified.

3.17 CLEANING AND PAINTING

- A. Collect and remove from the premises all debris, scraps and other waste material after completion of work.
- B. Tamp and level all trench work.
- C. Remove excess dirt and debris, when and as directed by the Engineer.
- D. Thoroughly clean all electrical equipment, lighting fixtures, exposed conduit, enclosures and boxes of all foreign materials and paint in accordance with Section 09900 of these Specifications unless noted or directed otherwise.
- E. Clean any exposed threaded area of raceway of cutting oil and paint with a cold galvanizing compound prior to final finish painting.

3.18 ELECTRIC EQUIPMENT BY OTHERS

- A. The equipment manufacturer shall furnish all motors for equipment.
- B. Verify voltage, dimensions, extent, type, etc. of this and all other such electrical equipment.
- C. Furnish and install all electrical supply and control equipment and material required to put all the items in proper operative condition.
- D. Refer to other sections of these specifications for verification of other equipment and devices requiring electrical connections, wiring and devices not included in this section.
- E. Refer to other drawings for details not indicated on the electrical drawings.
- F. Prior to connecting any piece of such equipment, check the nameplate data against the information shown on the drawings and call to the immediate attention of the Engineer any discrepancies discovered.

3.19 PROJECT COMPLETION

- A. Test all 600-Volt service entrance and feeder wiring using an instrument, which applies a voltage of approximately 500 volts DC to provide a direct reading of resistance.
- B. Perform test on ground system utilizing Fall-Of-Potential method. Meg grounding systems to measure ground resistance, and provide not more than 25 ohms resistance, adding ground rods as necessary to achieve that level.
- C. Conduct all tests in presence of Engineer or his representative. Identify and properly record all readings. Submit readings to Engineer for acceptance.
- D. Measure voltages as directed by the Engineer and report to him these values.
- E. Provide entire system free from all shorts and grounds.
- F. Fully comply with local and national codes for equipment bonding and grounding.

- G. Test system in the presence of the Engineer and operate to his complete satisfaction in accordance with true intent of plans and specifications. Defray cost of all adjustments necessary to bring system up to standards set forth by Contract Documents at no additional cost.
- H. Thoroughly indoctrinate the Owner's operation and maintenance personnel in the contents of the operations and maintenance manual.
- I. On the first day the facility is in operation, for at least eight (8) hours at a time directed by the Engineer, provide a qualified foreman and crew to perform such electrical work as may be required by the Engineer.

3.20 MEASUREMENT AND PAYMENT

- A. No separate measurement or direct payment will be made for this work and all costs for same shall be included in the price bid for the work to which it pertains.

END OF SECTION



March 4, 2015

Ms. Suzanne Armour, Regional Counsel
US EPA Region 4
Atlanta Federal Center
61 Forsyth Street SW
Atlanta, GA 30303-3104

RE: City of Florence/
Town of Timmonsville
Consent Decree
Local Limits Headworks Analysis
URS File No. 46423366

Dear Ms. Armour:

As required per the City of Florence/Town of Timmonsville Consent Decree item 60, please find enclosed the Local Limits Headworks Analysis and Evaluation Report.

Thank you for your attention in this matter. If you have any questions or require additional information, please do not hesitate to contact me.

Very truly yours,

URS Corporation

Shelby Ozburn LeBron, P.E.
Senior Project Engineer

Enclosures

cc/encl: Mr. David Phillips, EPA
Mr. Glenn Troffatter, SCDHEC
Ms. Paula Brown, SCDHEC EQC
Mr. Michael Hemingway, City of Florence
cc: Mr. Dan Dietz, City of Florence
Mr. Porter Rivers, III, P.E., URS



MEMORANDUM

To: Suzanne Armour, EPA, David Phillips, EPA, Glenn Trofatter, SCDHEC, and Paula Brown, SCDHEC EQC

From: Shelby Ozburn LeBron, P.E.

Date: March 4, 2015

Subject: Timmonsville WWTP Headworks Update

Project: 46423366

The Town of Timmonsville's WWTP headworks was updated based on the updated NPDES permit issued by SCDHEC effective on December 1, 2014. As required in the permit's schedule of compliance, the headworks was updated including a reevaluation of industrial allocations. A pretreatment questionnaire from Honda is included in the submittal as well as a draft Industrial User Permit. The City of Florence conducted domestic sampling in the Town of Timmonsville's collection system for the following parameters:

- Cadmium
- Copper
- Cyanide
- Lead
- Mercury
- Silver

The City utilized the results from the domestic sampling to determine the domestic loading for the system. EPA domestic concentrations were utilized for the remaining parameters. Textbook values were utilized in the DHEC pretreatment loading spreadsheet, which was utilized for the maximum allowable headworks loading (MAHL) to the WWTP. As illustrated in the Timmonsville headworks loading page, the monthly average MAIL for cadmium is a negative value. The monthly average and daily maximum MAILs for silver are also negative. Honda is a categorical discharger with categorical limits for both cadmium and silver. Influent and effluent WWTP data was collected to determine if a site specific removal efficiency could be used to aid in providing additional loading, but the influent and effluent results were all below detection. The MAHL are restricted based on the receiving stream. Therefore, the PQL for cadmium and silver were utilized as the permit limits, since there was not any MAIL available.

Timmonsville Headworks Loadings

Parameters	Maximum Allowable Headworks Loading to WWTP		Domestic Levels (mg/L)	Domestic Levels (lbs/day)	Maximum Allowable Industrial Loading (lbs/day)	
	Monthly Avg (lbs/d)	Daily Max (lbs/day)			Monthly Avg (lbs/d)	Daily Max (lbs/day)
BOD ₅	4,173	4,173	250	2,829	1,344	1,344
TSS	4,173	4,173	250	2,829	1,344	1,344
Ammonia	320	480	25	286	34	194
Arsenic	1.668	1.668	0.007	0.080	1.59	1.59
Benzene	13.3	26.7	N/A	N/A	13.34	27
Cadmium	0.017	0.096	0.0025	0.028	-0.011	0.067
Chromium	22.849	22.849	0.034	0.385	22.46	22.465
Copper	1.157	1.512	0.0328	0.371	0.786	1.141
Cyanide	0.280	1.184	0.0025	0.028	0.25	1.155
Ethylbenzene	147	288	N/A	N/A	147.04	288
Lead	0.150	3.882	0.003	0.034	0.12	3.848
Mercury	0.003	0.004	0.126	1.426	-1.42	-1.422
Molybdenum	N/A	NA	N/A	N/A	N/A	NA
Nickel	2.223	16.680	0.047	0.532	1.69	16.148
Selenium	0.17	0.667	N/A	N/A	0.17	0.67
Silver	0.013	0.013	0.003	0.028	-0.02	-0.016
Toluene	147	295	N/A	N/A	147	295
TTO*	N/A	N/A	0.1132	1.281	N/A	N/A
Xylene	4.17	8.340	N/A	N/A	4.17	N/A
Zinc	6.354	6.354	0.231	2.614	3.741	3.741

*Make total TTO limits a maximum of 5 mg/L for an industry due to potential concerns about toxicity of fumes. If there are particular TTOs of concern, then evaluate those pollutants.

At 2 MGD, the influent BOD design is 250 mg/L.

>97.5% ammonia removal per design criteria.

2 MGD permitted

Flow Inventory

1.372 MGD

Date Revised:

1/21/2015

TIMMONSVILLE HEADWORKS ALLOCATION

NO.	INDUSTRY	Daily Max Flow (MGD)	Mo Avg Flow (MGD)	BOD ₅ (Daily Max) mg/l	BOD ₅ (Daily Max) lbs/d	BOD ₅ (Mo Avg) mg/l	BOD ₅ (Mo Avg) lbs/d	TSS (Daily Max) mg/l	TSS (Daily Max) lbs/d	TSS (Mo Avg) mg/l	TSS (Mo Avg) lbs/d	O & G (Daily Max) mg/L
001	Honda of South Carolina ^A	0.015	0.008	NA	NA	250	15.85	NA	NA	250	16	100
	Total Permitted	0.015	0.008		0		16		0		16	
	MAIL (lb/d)				1,344		1,344		1,344		1,344	
	Percent Allocated of MAIL				0.0%		1.2%		0.0%		1.2%	
	Domestic Loading (lb/d)				2,829		2,829		2,829		2,829	
	Future Industrial Available (lb/d)				1,344		1,328		1,344		1,328	
	Future Industrial Available (%)				100%		99%		100%		99%	
	MAHL				2,829		2,844		2,829		2,844	
	% of MAHL Allocated				67.8%		68.2%		67.8%		68.2%	

Date Revised:

1/21/2015

^AMetal Finishing Point Source Category 40 CFR Part 433, Subpart A - Metal Finishing Subcategory, 433.15, Pretreatment Standards for Existing Sources

Limits highlighted in red are parameters that must have a limit at least as stringent as the categorical standard.

O & G (Mo Avg) mg/L	Ammonia (Daily Max) mg/l	Ammonia (Daily Max) lbs/day	Ammonia (Mo Avg) mg/l	Ammonia (Mo Avg) lbs/day	Arsenic (Daily Max) mg/l	Arsenic (Daily Max) lbs/day	Arsenic (Mo Avg) mg/l	Arsenic (Mo Avg) lbs/day	Cadmium (Daily Max) mg/l	Cadmium (Daily Max) lbs/day	Cadmium (Mo Avg) mg/l	Cadmium (Mo Avg) lbs/day	Chromium (Daily Max) mg/l	Chromium (Daily Max) lbs/day	Chromium (Mo Avg) mg/l
NA									0.540	0.03	0.0001	0.00001	2.04	0.13	1.36
		0.000		0.000		0.000		0.000		0.034		0.000		0.129	
		194		34		1.588		1.588		0.067		-0.011		22.465	
		0.0%		0.0%		0.0%		0.0%		50.8%		-0.1%		0.6%	
		286		286		0.08		0.08		0.028		0.028		0.38	
		194		34		2		2		0.03		-0.01		22.34	
		100%		100%		100%		100%		49%		100%		99%	
		285.99		285.99		0.08		0.08		0.063		0.028		0.514	
		59.6%		89.4%		4.8%		4.8%		65.3%		162.4%		2.2%	

Chromium (Mo Avg) lbs/day	Copper (Daily Max) mg/l	Copper (Daily Max) lbs/d	Copper (Mo Avg) mg/l	Copper (Mo Avg) lbs/d	Cyanide (Daily Max) mg/l	Cyanide (Daily Max) lbs/d	Cyanide (Mo Avg) mg/l	Cyanide (Mo Avg) lbs/d	Lead (Daily Max) mg/l	Lead (Daily Max) lbs/d	Lead (Mo Avg) mg/l	Lead (Mo Avg) lbs/d	Mercury (Daily Max) mg/l	Mercury (Daily Max) lbs/day	Mercury (Mo Avg) mg/l
0.09	0.72	0.05	0.48	0.03	0.017	0.001	0.010	0.001	0.28	0.02	0.19	0.01	MR		MR
0.086		0.046		0.030		0.001		0.001		0.018		0.012		0.000	
22.465		1.141		0.786		1.155		0.252		3.848		0.116		-1.422	
0.4%		4.0%		3.9%		0.1%		0.3%		0.5%		10.4%		0.0%	
0.38		0.37		0.37		0.03		0.03		0.03		0.034		1.43	
22.38		1.10		0.76		1.15		0.25		3.83		0.10		-1.42	
100%		96%		96%		100%		100%		100%		90%		100%	
0.471		0.42		0.40		0.03		0.029		0.052		0.046		1.426	
2.1%		21.6%		34.7%		2.5%		10.3%		1.3%		30.7%		37879.2%	

Mercury (Mo Avg) lbs/day	Molybdenum (Daily Max) mg/l	Molybdenum (Daily Max) lbs/day	Molybdenum (Mo Avg) mg/l	Molybdenum (Mo Avg) lbs/day	Nickel (Daily Max) mg/l	Nickel (Daily Max) lbs/day	Nickel (Mo Avg) mg/l	Nickel (Mo Avg) lbs/day	Selenium (Daily Max) mg/L	Selenium (Daily Max) lb/d	Selenium (Mo Avg) mg/L	Selenium (Mo Avg) lb/d	Silver (Daily Max) mg/l	Silver (Daily Max) lbs/day
					3.55	0.23	2.37	0.15					0.005	0.0003
0.000		0.000		0.000		0.225		0.150		0.000		0.000		0.000
-1.423		NA		N/A		16.148		1.691		0.667		0.167		-0.016
0.0%		NA		NA		1.4%		8.9%		NA		0.0%		-2.0%
1.426		N/A		N/A		0.53		0.53		N/A		N/A		0.028
-1.42		NA		NA		15.92		1.54		0.67		0.17		-0.02
100%		NA		NA		99%		91%		NA		100%		102%
1.426		NA		0.000		0.757		0.682		0.000		0.000		0.029
55303.6%		NA		NA		4.5%		30.7%		NA		0.0%		225.6%

Silver (Mo Avg) mg/l	Silver (Mo Avg) lbs/day	TTO (Daily Max) mg/l	TTO (Daily Max) lbs/day	TTO (Mo Avg) mg/l	TTO (Mo Avg) lbs/day	Zinc (Daily Max) mg/l	Zinc (Daily Max) lbs/d	Zinc (Mo Avg) mg/l	Zinc (Mo Avg) lbs/d
0.005	0.0003	2.13	0.14	NA	NA	2.61	0.17	1.48	0.09
	0.000		0.135		0.000		0.165		0.094
	-0.016		N/A		N/A		3.741		3.741
	-2.0%		N/A		N/A		4.4%		2.5%
	0.028		1.28		1.28		2.61		2.61
	-0.02		NA		NA		3.58		3.647
	102%		NA		NA		96%		97%
	0.029		1.416		1.281		2.78		2.71
	225.6%		N/A		N/A		43.7%		42.6%

CITY OF FLORENCE
SIGNIFICANT INDUSTRIAL
WASTEWATER DISCHARGE PERMIT

PERMIT NO. 001

In accordance with all terms and conditions of the City of Florence Sewer Use Ordinance, the Federal Clean Water Act (PL 95-217), the General Pretreatment Regulations for Existing and New Sources of Pollution (40 CFR Part 403), South Carolina Pretreatment Regulation (R.61-9.403), and any future supplements and/or changes thereto, permission is hereby granted to:

Honda of South Carolina
(Industry Name)

1111 Honda Way
Timmonsville, SC 29161
(Mailing Address)

3799
(SIC Number(s))

Same as mailing address
(Location Address)

For the discharge of non-domestic wastewater into the City's wastewater collection system. This permit is granted in accordance with:

1. The Industrial Wastewater Survey Questionnaire/Discharge Permit Application, dated 4/17/2014.
2. Any plans, specifications, and/or other data submitted to and approved by the City and on file in the City offices; and
3. The effluent limitations, monitoring requirements and other conditions set forth herein.

This permit shall become effective on:

TBD, 2015.

This permit and authorization to discharge shall expire at midnight on TBD, 2017; unless other conditions supersede, and thus, revoke or modify this expiration date.

Date

Director of Utilities

I. EFFLUENT LIMITATIONS & MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the expiration date, discharge shall be limited and monitored by the Permittee as follows:

Outfall 001 (Discharge from ATV Product Line)

PARAMETER	DISCHARGE LIMITATIONS		MONITORING FREQUENCY	SAMPLE TYPE	PQL (mg/L) ¹
	Daily Maximum mg/L (lbs/day)	Monthly Average mg/L (lbs/day)			
BOD	N/A	250 (16)	Monthly	Composite	2
TSS	N/A	250 (16)	Monthly	Composite	1
Oil & Grease	100	N/A	Monthly	Grab	5
Cadmium ²	0.54 (0.03)	0.0001 (0.00001)	Quarterly	Composite	0.0001
Chromium, T ²	2.04 (0.13)	1.36 (0.09)	Quarterly	Composite	0.005
Copper ²	0.72 (0.05)	0.48 (0.03)	Quarterly	Composite	0.01
Cyanide ²	0.017 (0.001)	0.010 (0.0006)	Quarterly	Grab	0.01
Lead ²	0.28 (0.02)	0.19 (0.01)	Quarterly	Composite	0.002
Mercury	MR	MR	Quarterly	Grab	0.002
Nickel ²	3.55 (0.23)	2.37 (0.15)	Quarterly	Composite	0.01
Silver ²	0.005 (0.0003)	0.005 (0.0003)	Quarterly	Composite	0.005
Zinc ²	2.61 (0.17)	1.48 (0.09)	Quarterly	Composite	0.01
TTO ²	2.13 (0.14)	N/A	Yearly	Grab	N/A
BTEX ³	MR	MR	Quarterly	Grab	N/A

Di-n-butyl phthalate	MR	MR	Quarterly	Composite	0.01
Bis (2-ethylhexyl) phthalate	MR	MR	Quarterly	Composite	0.01
FLOW	DISCHARGE LIMITATIONS		MONITORING FREQUENCY	DEVICE	
	Daily Maximum MGD	Average Monthly MGD			
	0.015	0.0076			
			Daily	Bubble Meter	

¹PQL = Practical Quantitation Limits; Parameters must be analyzed at or below the listed PQL.

²Metal Finishing Point Source Category 40 CFR Part 433, Subpart A - Metal Finishing Subcategory, 433.15, Pretreatment Standards for Existing Sources

³Monitor and report as Benzene, Toluene, Ethylbenzene, Xylene (total), and BTEX (total).

The pH of the discharge shall not be less than 6.0 nor greater than 10.0 and shall be monitored monthly by grab sample.

The temperature of the discharge shall not exceed 150°F and shall be monitored and reported monthly by grab sample.

Total flow:

During the period beginning on the effective date of this permit and lasting through the expiration date, discharge shall be limited and monitored by the Permittee as follows:

FLOW	DISCHARGE LIMITATIONS		MONITORING FREQUENCY	DEVICE
	Daily Maximum MGD	Average Monthly MGD		
	0.066	0.066		
			Daily	Water Meter

II. SELF-MONITORING & REPORTING REQUIREMENTS

1. Samples and measurements shall be taken as required in Item I above, and shall be representative of the volume and nature of "normal" daily operations.
2. The Permittee must obtain City approval of the sampling point location prior to initiation of self-monitoring. Approved sampling point location:
Outfall 001: After ATV pretreatment system and prior to mixing with other wastestreams.
3. Self-Monitoring shall be summarized monthly and reported on a Significant Industrial Wastewater Discharge Monitoring form provided by the industry.
4. Self-Monitoring reports shall be postmarked no later than the 15th day of the month following the completed reporting period.
5. Monthly averages, for reporting purposes, shall be calculated as follows:
 - a. For monthly reporting, the monthly average shall be the arithmetic mean of all samples collected during the report month.
 - b. For quarterly reporting periods or other periods greater than one month, the "Monitoring Period Average" shall be the arithmetic mean of all samples collected during the report period (i.e., quarter).
6. The arithmetic mean of any set of values is the summation of the individual values divided by the number of individual values.
7. Average daily flow limit expressed in this permit is the 24-hour average flow. It is determined as the arithmetic mean of total daily flow recorded during the reporting period. The maximum daily flow limit included in this permit is the 24-hour total flow.
8. Composite samples: One of the following four types of composite samples as defined is specified within this permit:
 - (a) An influent or effluent portion collected continuously over a specified period of time at a rate proportional to the flow.
 - (b) A combination of not less than 8 influent or effluent grab samples collected at regular (equal) intervals over a specified period of time, properly preserved, and composited by increasing the volume of each aliquot in proportion to flow. If continuous flow measurement is not used to composite in proportion to flow, the following method will be used: Take an instantaneous flow measurement each time a grab sample is collected. At the end of the sampling period, sum the instantaneous flow measurements to obtain a total flow to determine the partial

amount (percentage) of each grab sample to be combined to obtain the composite sample.

- (c) A combination of not less than 8 influent or effluent grab samples of equal volume but at variable time intervals that are inversely proportional to the volume of the flow. That is, the time interval between aliquots is reduced as the volume of flow increases.
 - (d) A combination of not less than 8 influent or effluent grab samples of constant (equal) volume collected at regular (equal) time intervals over a specified period of time, while being properly preserved.
 - (e) Continuous flow or the sum of instantaneous flows measured and averaged for the specified compositing time period shall be used with composite sample results to calculate quantity.
9. Grab Sample: An individual discrete or single influent or effluent portion of at least 100 milliliters collected at a time representative of the discharge and over a period not exceeding 15 minutes and retained separately for analysis. Instantaneous flow measured at the time of grab sample collection shall be used to calculate quantity.
10. Test procedures for the analysis of pollutants shall conform to regulations published pursuant to 40 CFR Part 136, as amended. All tests must be performed by a S.C. Department of Health and Environmental Control (SCDHEC) certified laboratory and approved by the City.
11. For each measurement or sample taken pursuant to the requirements of this permit, the Permittee shall record, at a minimum, the following information:
- a. The exact place, date, and time of sampling and sample type (grab or composite);
 - b. The dates the analyses were performed;
 - c. The persons who performed the analyses (including lab name and identification number and name of person performing the analysis and the corresponding dates);
 - d. The analytical techniques or methods used (i.e., GC/MS, atomic absorption or Standard Methods wet chemistry);
 - e. The analysis results of the above described monitoring;
 - f. The occurrence of any slug discharge or accidental spills; and
 - g. The signature of the chief company official or designated authorized signee at this location.
12. If the Permittee monitors any pollutant at the location(s) designated herein more frequently than required by this permit, using approved analytical methods as specified herein, the results of such monitoring shall be included in the calculation and reporting of the values required in the Industrial Wastewater Discharge Monitoring Form. Such increased

frequency shall also be reported.

13. If any self-monitoring indicates a violation of any condition of this permit, the Permittee shall notify the City within 24 hours of becoming aware of the violation. The Permittee shall immediately re-sample and submit the results of the analysis to the City within 30 days.
14. Industrial Wastewater Discharge Monitoring Forms, and all other reports required herein, shall be submitted to:

City of Florence
Wastewater Treatment Plant
1000 Stockade Drive
Florence, SC 29506

15. Appropriate flow measurement devices and methods consistent with accepted scientific practices shall be selected and used to ensure the accuracy and reliability of wastewater flowrate measurements. The devices shall be installed, calibrated, and maintained to ensure that the accuracy of the measurements are consistent with the capability of that type of device. Devices selected shall be capable of measuring flows with a maximum deviation of less than 10 percent from true discharge rates throughout the range of expected discharge volumes. City approval of flow measurement device type and location is required prior to installation.

III. SPECIAL CONDITIONS

The following special conditions apply to the Permittee and may be revised by the City at any time. Any required compliance schedules can be added to the Permit in this part.

1. Provide a copy of an annual calibration report conducted on any flow meter on which sewer user charges are based. Each calibration report must be performed by an independent, certified instrumentation technician.
2. Provide a copy of all wastewater pretreatment operators' current certification to the City on an annual basis or whenever a relevant employee change is made.
3. Record and maintain a daily log book by the operators to document operations observations/activities for the pretreatment system.
4. Honda of South Carolina agrees by acceptance of this permit to be bound by the City's Sewer Use Ordinance.

IV. GENERAL CONDITIONS

- A. All discharges authorized herein shall be consistent with the terms and conditions of this permit and in compliance with the City's Ordinance establishing the local Industrial Wastewater Program. The discharge of any pollutant identified in this permit more frequently than or at a level in excess of that authorized shall constitute a violation of the permit. Any anticipated facility expansions, production increases, or process modifications which will result in new, different, or increased discharges of pollutants must be reported by submission of a new Industrial Wastewater Survey Questionnaire/Discharge Permit Application or, if such changes will not violate the effluent limitations specified in this permit, by written notice to the City prior to implementation of such changes. Following such notice, the permit may be modified to specify and limit any pollutants not previously limited, to change existing limits, or to add conditions to Part III, "Special Conditions" of this permit. The Permittee shall receive approval from the City in writing for modifications to wastewater volume and/or characteristics before implementing anticipated plant or operations changes.
- B. The Permittee shall not discharge wastewater containing any of the prohibited substances listed in the City of Florence Sewer Use Ordinance. In addition, the Permittee shall not discharge wastewater containing:
1. Any gasoline, fuel oil or other flammable or explosive liquids, solids or gases.
 2. Any pollutant, including oxygen demanding pollutants (BOD, etc.), at flow rate and/or concentration which will cause the pollutant to pass through to the receiving waters or interfere with the City's wastewater treatment facility.
 3. Pollutants which create a fire or explosion hazard in the WWTP, or collection system, including, but not limited to wastestreams with a closed cup flashpoint of less than 140 degrees Fahrenheit using the test methods specified in 40 CFR 261.21.
 4. Petroleum oil, non-biodegradable cutting oil, or products of mineral oil origin in amounts that will cause interference or pass through at the WWTP.
 5. Pollutants which result in the presence of toxic gases, vapors or fumes within the WWTP, or collection system, in quantity that may cause acute or chronic health and safety problems.
- C. In the event of any change in control or ownership of facilities from which the authorized discharges emanate, the Permittee shall notify the succeeding owner or controller of the existence of this permit by letter, a copy of which shall be forwarded to the City. This permit is transferable only with prior written approval by the City.

- D. The Permittee shall at all times maintain in good working order and operate as efficiently as possible all treatment or control facilities or systems installed or used by the Permittee to achieve compliance with the terms and conditions of this permit.
- E. Provide and maintain a City-approved monitoring station for sampling and flow measurement (if applicable) of the process wastewater. Access to this station for representatives of either the City, DHEC, or EPA must also be provided.
- F. Comply with the City's Surcharge Policy for the discharge of high strength wastewater as defined by concentrations above the following threshold limits:

<u>Surcharge Parameter</u>	<u>Concentration Threshold</u>
BOD	250 mg/l
TSS	250 mg/l

- G. Comply within 30 days with future permit changes regarding monitoring frequencies, parameters to be tested or special conditions modifications that do not require a compliance schedule for implementation.
- H. If the Permittee employs the use of evaporators for the purposes of wastewater minimization, resource recovery, or for wastewater treatment, the City may require that the Permittee:
- 1) Monitor and report flow quantities and characteristics to evaporation units;
 - 2) Monitor and report quantities of residues generated by the evaporation processes, including ultimate fate of residues.

The cost of installing and maintaining flow measuring devices shall be paid by the Permittee.

- I. The Permittee is required to report all slug discharges, spills, upsets, or malfunctions or bypasses of pretreatment equipment immediately by phone and followed in writing to the City of Florence WWTP, 1000 Stockade Drive, Florence, SC 29506. Phone (843) 665-3240 to report these situations on a 24-hour, 7-day basis. The written report will be submitted within twenty-four (24) hours by fax (843) 665-3245, and shall include the following:
1. Description and cause of the upset, slug load or accidental discharge, and the impact on the Permittee's compliance status. The description should also include location of discharge, type, concentration and volume of waste.
 2. Duration of non-compliance, including exact dates and times of non-compliance and, if the non-compliance is continuing, the time by which compliance is

reasonably expected to occur.

3. All steps taken or to be taken to reduce, eliminate, and/or prevent recurrence of such an upset, slug load, accidental discharge, or other conditions of non-compliance.

- J. The Permittee will be required to submit a Slug Discharge Control Plan if the results from the City's annual evaluation indicate that a plan is necessary.
- K. Upon promulgation of Federal Categorical Pretreatment Standards, the City will notify the applicable industries of any additional requirements which may require modifications to or reissuance of this permit. Should the Permittee wish to contest the determination that the standards are applicable, the City will provide the necessary steps to take in contesting this determination.

Within 180 days after the effective date of Categorical Pretreatment Standard, any non-domestic discharger that will have to meet that new Standard must report to the City as described in 40 CFR Part 403.12 (b), as amended.

- L. After notice and opportunity for a hearing, this permit may be modified, suspended, or revoked in whole or in part during its term for good cause including, but not limited to, the following:
 1. Violation of any terms or conditions of this permit, the Sewer Use Ordinance and/or the EPA General Pretreatment Regulations for Existing and New Sources of Pollution (40 CFR Part 403).
 2. Obtaining this permit by misrepresentation or failure to disclose fully all relevant facts.
 3. A change in any condition that requires either a temporary or permanent reduction or elimination of the regulated discharge.
 4. Falsifying self-monitoring reports, tampering with monitoring equipment, or refusing timely access to the facility premises and records.
 5. Failure to comply with effluent limitations set forth in Part I of this permit.
- M. The City may modify or reissue this permit as local, state or federal regulations change or as needed to prevent pass through or interference of the City's treatment plant or to prevent violations of the City's wastewater discharge permits or any permits to operate or manage biosolids regardless of the expiration date or as necessary in the administration of the local Industrial Wastewater Program or to improve operational or maintenance problems at the wastewater treatment plant that are attributed to the discharge of a particular material or

pollutant.

- N. Penalties for failing to submit the required reports, falsification of reports, tampering with monitoring equipment or tampering with the samples collected are established in the City of Florence's Sewer Use Ordinance and Enforcement Response Guide.
- O. The Permittee shall allow authorized employees of the City, SCDHEC or the Environmental Protection Agency (EPA), on the premises at any time for the purposes of inspection, records examination (including photocopying of records) and sampling as connected with the City's Industrial Wastewater Program and operation of the City's wastewater collection and treatment facilities.
- P. The Permittee is required to maintain and make available for inspection upon request all records required by 40 CFR Part 403.12. The Permittee must also maintain for a period of three (3) years and make available for inspection upon request the following records concerning self-monitoring:
1. The date, the exact place and time, the method and the name(s) of person(s) taking samples.
 2. The date and time each analysis was performed.
 3. The name of the person performing the analysis (lab name and identification number).
 4. The analytical techniques and results of analysis.
- All of the above records will be made available for copying purposes at the request of the City. The three (3) year retention period will be extended during the course of any unresolved litigation regarding the Permittee or when requested in writing by SCDHEC, EPA or the City.
- Q. The Permittee shall apply in writing for a renewal permit utilizing the questionnaire provided by the City a minimum of 180 days prior to expiration of the current permit. Provided further that limitations or conditions of a permit are subject to modification as may become necessary due to changes in applicable water quality standards, the City's NPDES permit discharge effluent limitations, other applicable law or regulation, or for other just cause. The Permittee will be notified of any proposed changes in this permit by the City at least thirty (30) days prior to the effective date of the change. Any change or new condition in this permit shall include a provision for a reasonable time schedule for compliance. The Permittee may appeal the decision of the City in regard to any changed permit conditions. Any change in a permit condition desired by the Permittee may be requested within 180 days of the existing permit expiration date. Permittee requests for permit modifications will not be considered at any other time during the year.
- R. This permit is in addition to and does not either directly or indirectly supersede the requirements contained within the Florence Sewer Use Ordinance.

- S. The City of Florence Sewer Use Ordinance provides that any person who violates a permit condition is subject to a civil penalty not to exceed \$2,000 per day of such violation. Any person who willfully or negligently violates permit conditions is also subject to criminal penalties including fines not to exceed \$2,000 or imprisonment for not more than 30 days or both. The Permittee may also be subject to further sanctions imposed under the authority of State and/or Federal law.
- T. In addition to civil and criminal liability, the Permittee violating any of the provisions of this permit or the City of Florence Sewer Use Ordinance or causing damage to or otherwise inhibiting the WWTP or collection system shall be liable to the City for any expense, loss, or damage caused by such violation of discharge. The Permittee shall be billed by the City for any and all costs incurred by the City for any cleaning, repair, fines, or replacement work caused by the industrial violation or discharge. Refusal to pay the assessed costs shall be considered grounds for termination of permit and sewer service.
- U. Compliance with this permit does not relieve the Permittee from its obligations regarding compliance with any and all applicable local, State and Federal pretreatment standards and requirements including any such standards or requirements that may become effective during the term of this permit.
- V. In cases of industrial pretreatment system upset, upon reduction of efficiency of the pretreatment operation, or loss or failure of all or part of the treatment facility, the Permittee shall, to the extent necessary to maintain compliance with its permit, control its production or discharges (or both) until operation of the treatment facility is restored or an alternative method of treatment is provided. This requirement applies, for example, when the primary source of power of the treatment facility fails or is reduced. It shall not be a defense for a Permittee in an enforcement action that it would have been necessary to halt or reduce industrial production in order to maintain compliance with the condition of this permit.
- W. The Permittee shall not discharge any water or wastes which directly or indirectly cause the WWTP to violate NPDES whole effluent toxicity test requirements. Users found to be the cause of toxicity will be required to reimburse the City including fines for all costs associated with Toxicity Identification/Evaluation (TIE) and/or Toxicity Reduction Evaluations (TRE).
- X. Bypassing of any pretreatment system is prohibited unless it is unavoidable to prevent loss of life, personal injury, or severe property damage or where no feasible alternative exists. The Permittee may allow bypass to occur which does not cause effluent limitations to be exceeded, but only if it is also for essential maintenance to assure efficient operation. For planned bypasses, the Permittee must give a written notice to the City of Florence at least ten (10) days prior to the planned bypass, and in instances of accidental or unintentional bypasses, the Permittee must immediately notify the City and a written notice must be given to the City of Florence within 24 hours from the time the Permittee becomes aware of the bypass. A written submission containing all information required under Part IV (I) of this

Permit shall be provided within 5 days of the written notification. The City of Florence will then provide written approval.

Y. Authorized Representative of Industrial User – an authorized representative of an industrial user may be:

1. A principal executive officer of at least the level of vice president (if a corporation);
2. A general partner or proprietor (partnerships or proprietorships);
3. A duly authorized representative of the individual designated above if such representative is responsible for the overall operation of the facilities from which the indirect discharge originates.

Z. Acknowledgment of receipt of permit by authorized official:

I hereby certify that I am aware of, and agree to abide by, all provisions contained within Significant Industrial Wastewater Discharge Permit Number 001, dated effective TBD, 2015.

Authorized Company Signature: _____

Print or Type Name: _____

Title (Executive Officer) : _____

Date: _____

Authorized Employee/DMR Signature: _____

Print or Type Name: _____

HONDA

Honda of South Carolina Mfg., Inc.

Honda of South Carolina Mfg., Inc
1111 Honda Way
Timmons ville, SC 29161 April 2014



BLUE SAILS FOR
OUR CHILDREN

HONDA OF SOUTH CAROLINA MFG., INC.'S

**DISCHARGE PERMIT APPLICATION
WASTEWATER SURVEY QUESTIONNAIRE**

SUBMITTED APRIL 2014

HONDA

Honda of South Carolina Mfg., Inc.

Honda of South Carolina Mfg., Inc
1111 Honda Way
Timmons ville, SC 29161 April 2014

BLUE SKIES FOR
OUR CHILDREN

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HONDA

Honda of South Carolina Mfg., Inc.

Honda of South Carolina Mfg., Inc
1111 Honda Way
Timmons ville, SC 29161 April 2014



BLUE SKIES FOR
OUR CHILDREN

HONDA OF SOUTH CAROLINA MFG., INC.'S

**DISCHARGE PERMIT APPLICATION
WASTEWATER SURVEY QUESTIONNAIRE**

SUBMITTED APRIL 2014



**DISCHARGE PERMIT APPLICATION
WASTEWATER SURVEY QUESTIONNAIRE**

SECTION A - GENERAL INFORMATION

- A.1. Company name, mailing address, and telephone number:
Honda of South Carolina Mfg., Inc.
1111 Honda Way
Timmonsville, SC
Zip Code 29161 Telephone No. () 843-346-8000
- A.2. Address of production or manufacturing facility. (If same as above, check X.)

Zip Code _____ Telephone No. () _____
Tax Map Number _____

Note to Signing Official: In accordance with Title 40 of the Code of Federal Regulations Part 403 Section 403.14, information and data provided in this questionnaire which identifies the nature and frequency of discharge shall be available to the public without restriction. Requests for confidential treatment of other information shall be governed by procedures specified in 40 CFR Part 2. Should a discharge permit be required for your facility, the information in this questionnaire will be used to issue the permit.

This is to be signed by an authorized official of your firm after adequate completion of this form and review of the information by the signing official.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fines and imprisonment for knowing violations.

Authorized Representative:

4/17/2014
Date

Steven Rath / Assistant Vice President

Type of Print Name / Title

Steven W. Rath
Signature



A.3. Company representative to serve as signatory authority:
Name Steven Rath Title Assistant Vice President
Telephone No. 843-346-8029

A.4. Company representative to serve as contact person:
Name Tom Bailey Title Environmental Coordinator
Telephone No. 843-346-8117

A.5. Identify the type of business conducted (auto repair, machine shop, electroplating, warehousing, painting, printing, meat packing, food processing, etc.)
All terrain vehicle (ATV) and Side by Side (SxS) manufacturing.

A.6. Provide a brief narrative description of the manufacturing, production, or service activities your firm conducts.

See Appendix A for a complete description.

A.7. Standard Industrial Classification Number(s) (SIC Code) for your facilities:
SIC 3799 NAICS 33699

A.8. This facility generates the following type of wastes (check all that apply):

	<u>Average Gallons</u> <u>Per Day</u>	
1. <input checked="" type="checkbox"/> Domestic Wastes (restrooms, employee showers, etc.)	<u>11,890</u>	<input type="checkbox"/> estimated <input checked="" type="checkbox"/> measured
2. <input type="checkbox"/> Cooling Water, Non-Contact	<u> </u>	<input type="checkbox"/> estimated <input type="checkbox"/> measured
3. <input type="checkbox"/> Boiler/Tower Blowdown	<u> </u>	<input type="checkbox"/> estimated <input type="checkbox"/> measured
4. <input type="checkbox"/> Cooling Water, Contact	<u> </u>	<input type="checkbox"/> estimated <input type="checkbox"/> measured
5. <input checked="" type="checkbox"/> PROCESS	<u>ATV & SxS 1,770</u>	<input type="checkbox"/> estimated <input checked="" type="checkbox"/> measured
6. <input type="checkbox"/> Equipment/Facility Washdown	<u> </u>	<input type="checkbox"/> estimated <input type="checkbox"/> measured



7. ☐ Air Pollution Control Unit _____ ☐ estimated ☐ measured
8. ☐ Storm Water Runoff to Sewer _____ ☐ estimated ☐ measured
9. ☐ Contaminated Ground Water Recovery _____ ☐ estimated ☐ measured
10. ☐ Medical Wastewater _____ ☐ estimated ☐ measured
11. ☒ Other (describe) Oily Water 488 GPD
Air Comp Condensate 5 GPD 493 ☐ estimated ☒ measured
- Total A.8.1-A.8.11** 14,153

A.9. Wastes are discharged to (check all that apply):

	<u>Average Gallons Per Day</u>	
<input checked="" type="checkbox"/> Sanitary Sewer	<u>13,665</u>	<input type="checkbox"/> estimated <input checked="" type="checkbox"/> measured
<input type="checkbox"/> Storm Sewer	_____	<input type="checkbox"/> estimated <input type="checkbox"/> measured
<input type="checkbox"/> Surface Water	_____	<input type="checkbox"/> estimated <input type="checkbox"/> measured
<input type="checkbox"/> Ground Water	_____	<input type="checkbox"/> estimated <input type="checkbox"/> measured
<input checked="" type="checkbox"/> Waste Haulers	<u>488</u>	<input type="checkbox"/> estimated <input checked="" type="checkbox"/> measured
<input type="checkbox"/> Evaporation	_____	<input type="checkbox"/> estimated <input type="checkbox"/> measured
<input type="checkbox"/> Other (describe)	_____	<input type="checkbox"/> estimated <input type="checkbox"/> measured

Provide name and address of waste hauler(s), if used.

HAZ-MAT Environmental Services, 210 Dalton Ave., Charlotte, NC 28206

A.10. Is a Spill Prevention Control and Countermeasure Plan prepared for the facility?

☒ yes

☐ no

A.11. List any environmental control permits issued to the facility and any discharge limits associated with those permits.

SCR003304 (General Stormwater Permit) no limits, SCR000006643 (EPA Hazardous Waste ID #) CESQ Generator, BAQ Operating Permit 1040-0094, Infectious Waste Generator Registration SC21-029G

Note: If your facility did not check one or more of the items listed in A.8.4 through A.8.11 above, skip to page 13 and complete Section E.3.b, E.3.c and all of Section E.4. If any items A.8.4 through A.8.11 were checked, complete the remainder of this survey/application.



SECTION B - FACILITY OPERATION CHARACTERISTICS

- B.1. Number of employee shifts worked per 24-hour day is 3.
Average number of employees per shift is 1st-922, 2nd-18, 3rd-10.
- B.2. Starting times of each shift: Five day operation. Third shift Sunday night thru second shift Friday night.
1st 6:30 ☒ am ☐ pm 2nd 2:30 ☐ am ☒ pm 3rd 10:30 ☐ am ☒ pm
- Note:** The following information in this section must be completed for each product line. Attach additional sheets as needed.
- B.3. Principal product produced: ATV's and SxS's
- B.4. Raw materials and process additives used: (Use separate sheet if needed)
Pounds/Day or Gal/Day SEE Appendix B
- B.5. Production Process is:
☐ Batch ☐ Continuous ☒ Both
% batch 12.5
%continuous 87.5
Average number of batches per 24-hour day 1
- B.6. Hours of operation: _____ am to _____ pm ☒ continuous
- B.7. Is production subject to seasonal variation? ☐ yes ☒ no
If yes, briefly describe seasonal production cycle.

- B.8. Are any process changes or expansions planned during the next three years.
☒ yes ☐ no
If yes, attached a separate sheet to this form describing the nature of planned changes or expansions. **See Appendix C**
- B.9. Average monthly water usage:
427,917 gallons



SECTION C - WASTEWATER INFORMATION

- C.1 If your facility employs processes in any of the industrial categories or business activities listed below and any of these processes generate wastewater or waste sludge, place a check beside the category or business activity (check all that apply).

Industrial Categories

1. ☒ Aluminum Forming Part 467 Aluminum Forming / Aluminum Die Casting - No process water discharged to POTW
2. ☐ Asbestos Manufacturing
3. ☐ Battery Manufacturing
4. ☐ Canned and Preserved Fruits and Vegetables Processing
5. ☐ Canned and Preserved Seafood Processing
6. ☐ Carbon Black Manufacturing
7. ☐ Cement Manufacturing
8. ☐ Centralized Waste Treatment
9. ☐ Coal Mining
10. ☐ Coil Coating
11. ☐ Concentrated Animal Feeding Operations (CAFO)
12. ☐ Concentrated Aquatic Animal Production
13. ☐ Copper Forming
14. ☐ Dairy Products Processing
15. ☐ Electric and Electronic Components Manufacturing
16. ☐ Electroplating
17. ☐ Explosives Manufacturing
18. ☐ Ferroalloy Manufacturing
19. ☐ Fertilizer Manufacturing
20. ☐ Glass Manufacturing
21. ☐ Grain Mills Manufacturing
22. ☐ Gum & Wood Chemicals Manufacturing
23. ☐ Hospitals
24. ☐ Ink Formulating
25. ☐ Inorganic Chemicals Manufacturing
26. ☐ Iron and Steel Manufacturing
27. ☐ Landfills
28. ☐ Leather Tanning and Finishing
29. ☐ Meat and Poultry Products
30. ☒ Metal Finishing Part 433 Metal Finishing (phosphate coating of ATV and SxS frames for powder painting)
31. ☒ Metal Molding and Casting Part 464 - See #1 above
32. ☐ Metal Products and Machinery
33. ☐ Mineral Mining and Processing
34. ☐ Nonferrous Metals Forming and Metal Powders
35. ☐ Nonferrous Metals Manufacturing
36. ☐ Oil & Gas Extraction
37. ☐ Ore Mining & Dressing
38. ☐ Organic Chemicals, Plastics, & Synthetic Fibers
39. ☐ Paint Formulating
40. ☐ Paving and Roofing Materials (Tars and Asphalt)
41. ☐ Pesticide Chemicals
42. ☐ Petroleum Refining
43. ☐ Pharmaceutical Manufacturing
44. ☐ Photographic
45. ☐ Phosphate Manufacturing
46. ☒ Plastics Molding & Forming Part 463 Plastics Molding & Forming - Injection & Blowmolding - non-contact air compressor condensate is only process water discharged to POTW
47. ☐ Porcelain Enameling



48. ☐ Pulp, Paper & Paperboard
49. ☐ Rubber Manufacturing
50. ☐ Soap and Detergent Manufacturing
51. ☐ Steam Electric Power Generating
52. ☐ Sugar Processing
53. ☐ Timber Products Processing
54. ☐ Textile Mills
55. ☐ Transportation Equipment Cleaning
56. ☐ Waste Combustors
57. ☐ Other (Identify) _____

C.2. Pretreatment devices or processes used for treating wastewater or sludge (check as many as appropriate).

- | | | |
|-------------------------------------|--------------------------------|--------------------------------------|
| <input type="checkbox"/> | Air Flotation | |
| <input type="checkbox"/> | Centrifuge | |
| <input type="checkbox"/> | Chemical precipitation | |
| <input type="checkbox"/> | Chlorination | |
| <input type="checkbox"/> | Cyclone | |
| <input checked="" type="checkbox"/> | Filtration | |
| <input checked="" type="checkbox"/> | Flow Equalization | |
| <input checked="" type="checkbox"/> | Grease or oil separation, type | Gravity Separation - Hydroflow Brand |
| <input checked="" type="checkbox"/> | Grease trap | Cafeteria discharge only |
| <input type="checkbox"/> | Grit removal | |
| <input type="checkbox"/> | Ion Exchange | |
| <input checked="" type="checkbox"/> | Neutralization, pH correction | |
| <input type="checkbox"/> | Ozonation | |
| <input type="checkbox"/> | Reverse Osmosis | |
| <input type="checkbox"/> | Screen | |
| <input type="checkbox"/> | Sedimentation | |
| <input type="checkbox"/> | Septic tank | |
| <input type="checkbox"/> | Solvent separation | |
| <input checked="" type="checkbox"/> | Spill prevention | |
| <input checked="" type="checkbox"/> | Sump | Wastewater treatment room only |
| <input type="checkbox"/> | Biological treatment, type | _____ |
| <input type="checkbox"/> | Rainwater diversion or storage | _____ |
| <input type="checkbox"/> | Other chemical treatment, type | _____ |
| <input type="checkbox"/> | Other physical treatment, type | _____ |
| <input type="checkbox"/> | Other, type | _____ |
| <input type="checkbox"/> | No pretreatment provided | |

Describe any wastewater pretreatment system including the name of the operator and location of the testing laboratory.

Honda's wastewater treatment consists of pretreatment of wastewater from the ATV frame preparation for powder painting. This involves phosphate coating of the metal frame (Part 433 Metal Finishing). Pretreatment starts with equalization. The alkaline stages are collected in one eq tank and the zinc stages (acidic) are collected in another eq tank. The wastewater from the alkaline side is treated with hydrochloric acid to crack the oil and grease out. It then goes through the oil water separator. Next the pH is raised with lime. From there it goes to a recirculation tank that feed an ultra filtration unit. The permeate from the ultra filtration unit goes to the final pH adjust tank where hydrochloric acid is used to adjust the effluent to the permit pH range. The reject from the ultra filtration unit goes back to the recirculation tank. Once the solids level is high enough the sludge is discharged from the recirculation tank to the sludge thickening tank. The wastewater from the acidic stages goes from the eq tank to the chemical addition tank where lime is added to raise the pH and precipitate the metals. From there it goes to a recirculation tank that feeds the acidic side ultra filtration system. The permeate goes to the same final pH adjust tank as the alkaline side. The solids concentrate in the recirculation tank until the sludge is discharged to the same sludge thickening tank as the alkaline side. The sludge from the thickening tank is pumped through a filter press. The liquid returns to the acidic eq tank. The solids from the filter press is accumulated in a covered roll-off. Once the roll-off is full, the filter cake (non-hazardous) is sent off-site to a fuels blending program. Davis & Brown is contracted to do the self-monitoring and analysis and provide the A Operator supervision. The A operator of record is Mike Brown.



- C.3. If any wastewater analysis have been performed on the wastewater discharge(s) from your facilities, attach a copy of the most recent data to this questionnaire. Be sure to include the date of analysis, name of laboratory performing the analysis, and location(s) from which sample(s) were taken (attach sketches, plans, etc., as necessary).
- C.4. Priority Pollutant Information: Please indicate by placing an "X" in the appropriate box by each listed chemical whether it is "Suspected to be Absent", "Known to be Absent", "Suspected to be Present" or "Known to be Present" in your manufacturing or service activity or generated as a by-product.

	Chemical Compound	Known Present	Suspected Present	Known Absent	Suspected Absent
I. <u>METALS AND INORGANICS</u>					
1.	Antimony	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2.	Arsenic	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3.	Asbestos	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4.	Beryllium	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5.	Cadmium	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6.	Chromium	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
7.	Copper	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8.	Cyanide	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9.	Lead	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
10.	Mercury	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
11.	Molybdenum	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
12.	Nickel	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13.	Selenium	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
14.	Silver	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
15.	Thallium	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
16.	Zinc	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
II. <u>PHENOLS AND CRESOLS</u>					
17.	Phenol(s)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
18.	Phenol, 2-chloro	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
19.	Phenol, 2, 4-dichloro	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
20.	Phenol, 2, 4, 6-trichloro	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
21.	Phenol, pentachloro	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
22.	Phenol, 2-nitro	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
23.	Phenol, 4-nitro	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
24.	Phenol, 2, 4-dinitro	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
25.	Phenol, 2, 4-dimethyl	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
26.	m-Cresol, p-chloro	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>



	Chemical Compound	Known Present	Suspected Present	Known Absent	Suspected Absent
27.	o-Cresol,4,6-dinitro	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
III.	<u>MONOCYCLIC AROMATICS</u> (Excluding Phenols, Cresols and Phthalates)				
28.	Benzene	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
29.	Benzene, chloro	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
30.	Benzene, 1,2-dichloro	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
31.	Benzene, 1,3-dichloro	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
32.	Benzene 1,4 dichloro	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
33.	Benzene, 1,2,4-trichloro	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
34.	Benzene, hexachloro	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
35.	Benzene, ethyl	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
36.	Benzene,nitro	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
37.	Toluene	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
38.	Toluene,2,4-dinitro	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
39.	Toluene,2,6-dinitro	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
IV.	<u>PCBs AND RELATED COMPOUNDS</u>				
40.	PCB-1016	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
41.	PCB-1221	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
42.	PCB-1232	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
43.	PCB-1242	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
44.	PCB-1248	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
45.	PCB-1254	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
46.	PCB-1260	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
47.	2-Chloronaphthalene	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
V.	<u>ETHERS</u>				
48.	Ether, bis (chloromethyl)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
49.	Ether, bis (2-Chloroethyl)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
50.	Ether, bis (2-chloroisopropyl)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
51.	Ether, vinyl (2-chloroethyl)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
52.	Ether, phenyl (4-bromophenyl)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>



	Chemical Compound	Known Present	Suspected Present	Known Absent	Suspected Absent
53.	Ether, phenyl (4-chlorophenyl)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
54.	Bis, methane (2-chloroethoxy)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
VI. NITROSAMINES AND OTHER NITROGEN-CONTAINING COMPOUNDS					
55.	Nitrosamine, Dimethyl	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
56.	Nitrosamine, Diphenyl	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
57.	Nitrosamine, di-n-propyl	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
58.	Benzidine	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
59.	Benzidine, 3,3'-dichloro	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
60.	Hydrazine 1,2-diphenyl	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
61.	Acrylonitrile	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
VII. HALOGENATED ALIPHATICS					
62.	Methane, bromo (methyl bromide)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
63.	Methane, chloro (methyl chloride)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
64.	Methane, dichloro	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
65.	Methane, chlorodibromo-	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
66.	Methane, dichlorobromo-	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
67.	Methane, tribromo-	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
68.	Methane, trichloro (chloroform)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
69.	Methane, tetrachloro (carbon tetrachloride)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
70.	Methane, trichlorofluoro	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
71.	Methane, dichlorodifluoro	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
72.	Ethane, chloro	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
73.	Ethane, 1,1-dichloro	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
74.	Ethane, 1,2-dichloro	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
75.	Ethane, 1,1,1-trichloro	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
76.	Ethane, 1,1,2-trichloro	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>



	Chemical Compound	Known Present	Suspected Present	Known Absent	Suspected Absent
77.	Ethane, 1,1,2 2-tetrachloro	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
78.	Ethane, hexachloro	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
79.	Ethene, chloro (vinyl chloride)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
80.	Ethene, 1,1- dichloro	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
81.	Ethene, 1,2- trans-dichloro	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
82.	Ethene, trichloro	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
83.	Ethene, tetrachloro	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
84.	Propane, 1,2- dichloro	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
85.	Propene, 1,3- dichloro	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
86.	Butadiene, hexachloro	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
87.	Cyclopentadiene hexachloro	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
VIII. <u>PHTHALATE ESTERS</u>					
88.	Phthalate, di-o-methyl	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
89.	Phthalate, di-n-ethyl	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
90.	Phthalate, di-n-butyl	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
91.	Phthalate, di-n-octyl	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
92.	Phthalate, bis (2-ethylhexyl)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
93.	Phthalate (butyl benzyl)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
IX. <u>POLYCYCLIC AROMATIC HYDROCARBONS</u>					
94.	Acenaphthene	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
95.	Acenaphthylene	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
96.	Anthracene	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
97.	Benzo (a) anthracene	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
98.	Benzo (b) fluoranthene	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
99.	Benzo (k) fluroanthene	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>



	Chemical Compound	Known Present	Suspected Present	Known Absent	Suspected Absent
100.	Benzo (ghi) Perylene	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
101.	Benzo (a) pyrene	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
102.	Chrysene	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
103.	Dibenzo (a,h) anthracene	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
104.	Fluoranthene	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
105.	Fluorene	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
106.	Indeno (1,2,3-cd) pyrene	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
107.	Naphthalene	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
108.	Phenanthrene	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
109.	Pyrene	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

X. PESTICIDES

110.	Acrolein	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
111.	Aldrin	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
112.	BHC (Alpha)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
113.	BHC (Beta)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
114.	BHC (Gamma) or Lindane	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
115.	BHC (Delta)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
116.	Chlordane	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
117.	DDD	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
118.	DDE	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
119.	DDT	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
120.	Dieldrin	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
121.	Endosulfan (Alpha)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
122.	Endosulfan (Beta)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
123.	Endosulfan Sulfate	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
124.	Endrin	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
125.	Endrin Aldehyde	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
126.	Heptachlor	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
127.	Heptachlor epoxide	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
128.	Isophorone	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
129.	TCDD (or Dioxin)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
130.	Toxaphene	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

C.5. If you are unable to identify the chemical constituents of products you use that are discharged in your wastewater, attach copies of the materials safety data sheets for such products.



SECTION D - OTHER WASTES

D.1. Are any liquid wastes or sludges from this firm disposed of by means other than discharge to the sewer system?

☒ yes

☐ no

if "no" skip remainder of Section D.
if "yes", complete the following items.

D.2. These wastes may be best described as:

	Estimated Gallons or Pounds/Year
<input type="checkbox"/> Acids and Alkalies	
<input type="checkbox"/> Heavy Metal Sludges	
<input type="checkbox"/> Inks/Dyes	
<input checked="" type="checkbox"/> Oil and/or Grease	oil is picked up with & included in oily water numbers below
<input checked="" type="checkbox"/> Paints	800 lb/yr
<input type="checkbox"/> Pesticides	
<input type="checkbox"/> Plating Wastes	
<input checked="" type="checkbox"/> Pretreatment Sludges	40,560 lb/yr
<input type="checkbox"/> Solvents/Thinners	
<input type="checkbox"/> Other Hazardous Wastes (specify)	
<input checked="" type="checkbox"/> Other Wastes (specify)	
Oily Water	176,540 gallons
Universal Waste & Used Batteries	Batteries 200 pounds, fluorescent lamps 1308, HID bulbs 388

D.3. For the above checked wastes, does your company practice:

- ☒ On-site storage
- ☐ Off-site storage
- ☐ On-site disposal
- ☒ Off-site disposal

Briefly describe the method(s) of storage or disposal checked above.

Waste paint is a hazardous waste. It is stored in our Waste Storage Building for shipment off-site to a permitted TSDF for waste to energy. The universal wastes are stored in this building also. The universal wastes are sent off-site to recyclers.

Pretreatment sludge is non-hazardous. It is stored in a roll-off box then sent to a fuels blending program.

Oily water is stored in 15,000 gallon tank on-site until it is picked up by tanker truck. It is treated off-site by a contract company for oil recovery & the water through wastewater treatment.



SECTION E - WASTESTREAM CHARACTERISTICS

- E.1. Number of discharges from regulated processes (those with an existing or proposed categorical limit) to sanitary sewer system and their locations.

Honda has 1 permitted discharge:

#001 is a discharge from the pretreatment of categorical process wastewater and is located in the ATV Plant's wastewater treatment room. The pretreatment flow is monitored by a V-notch weir flowmeter that discharges to the sanitary sewer at that location.

- E.2. **Provide a schematic drawing** showing the regulated process wastestreams, domestic wastewater flows, cooling water, boiler blowdown, etc.

See Appendix F

- E.3. Wastewater characteristics

- a. Identify the discharge from each regulated process and give flow for each type of discharge.

PROCESS	FLOW (gpd)		
	CONTINUOUS	INTERMITTENT	BATCH
ATV & SxS frame preparation for powder painting		1,770	

- b. Daily Flow: Average Daily Flow (GPD) 1,770
Average Maximum Daily Flow (GPD) 8,157

- c. Waste characteristics at point of discharge:

BOD _____ mg/l pH _____

COD _____ mg/l NH3-N _____

TSS _____ mg/l TKN _____

Oil & Grease _____ mg/l

See Appendix D for last analysis for Outfall #001



Priority Pollutants shown in Section C.4.

Pollutants

Concentration (mg/l)

See Appendix E for TTO Analysis

Flow at time sample collected _____ MGD

d. Priority Pollutants at each regulated process:

Process #

Pollutants

Concentration (mg/l)

See Appendix E for TTO Analysis

E.4. Does the wastewater discharged:

a) Create a fire or explosion hazard? ☐ Yes ☒ No

b) Have a pH lower than 5.0? ☐ Yes ☒ No

c) Contain a substance that can obstruct the flow in the collection system?
☐ Yes ☒ No

d) Have a temperature of greater than 140 ☐ F? ☐ Yes ☒ No

e) Contain petroleum oil, nonbiodegradable cutting oil, or products of mineral oil origin?
☒ Yes ☐ No

f) Contain pollutants which may create toxic gases, vapors, or fumes? ☐ Yes ☒ No

g) Consist of trucked or hauled wastes? ☐ Yes ☒ No

E.5. Does your facility employ evaporators for any purpose? ☐ Yes ☒ No



SECTION F - SLUG / SPILL PREVENTION

F.1. Does your facility utilize chemical storage containers, bins, or ponds at your facility?

☒ yes

☐ no

If "yes", please provide a description of their location(s), contents, size, type, and frequency/method of cleaning. Include a diagram or comment on the proximity of the storage containers to a sewer or storm drain. Identify if buried metal containers include cathodic protection. Attach additional pages as necessary.

See Appendix B

F.2. Are any floor drains or other sewer/storm drain inlets located in manufacturing or chemical storage area(s)?

☐ yes

☒ no

If "yes", where do they discharge to? _____

F.3. Could an accidental spill from any chemical storage containers, bins, or ponds lead to a discharge to any of the following (check all that apply)?

☐ on-site disposal system

☒ sanitary sewer system

☒ storm drain system

☒ to ground

☐ other, specify: _____

☐ not applicable or no possible discharge to any of the above

F.4. Have any of the following plans been prepared for your facility?

☒ Spill Prevention Control and Countermeasure Plan (SPCCP) **Appendix I**

☐ Slug Control Plan (SCP)

☒ Toxic Organic Management Plan (TOMP) **Appendix H**

☐ Solvent Management Plan (SMP)

If "yes", please include a copy with your Discharge Permit Questionnaire/Application.

F.5. Has your facility experienced any accidental spill events or slug discharges?

☐ yes

☒ no

If "yes", please describe (location, date, material, and volume) and identify any remedial and/or corrective action measures taken to prevent a reoccurrence:



HONDA

Honda of South Carolina Mfg., Inc.

Honda of South Carolina Mfg., Inc
1111 Honda Way
Timmons ville, SC 29161 April 2014



BLUE SKIES FOR
OUR CHILDREN

APPENDIX A

PROCESS DESCRIPTION FOR HONDA OF SOUTH CAROLINA

Process Description for Honda of South Carolina

Honda of South Carolina (HSC) manufactures All Terrain Vehicles (ATV's), Side by Side (SxS's), and service parts. In this manufacturing HSC operates an Aluminum Die Casting operation that takes aluminum ingots and melts them in natural gas fired furnaces. The molten aluminum is cast into ATV engine cases by high-pressure die-casting and ATV engine heads by low-pressure die-casting. Process water from the high-pressure die-casting consists of used die lube (oily water) that is collected in a tank on-site and pumped out by a contract company that treats the water off-site to recover the oil and the water for discharge. Low-pressure die casting process water consists of water that is used to quench the heads after heat-treating. This water is only pumped out when the tank needs to be worked on. This water is also pumped out by the contract company for off-site treatment. Die casting operations use closed loop (no discharge) chilled water systems for cooling.

After die casting, the aluminum parts go to the machining department. Machining uses synthetic, semi-synthetic, and cutting oils in the machining of aluminum and steel. Any used coolant and oils are pumped out by a contract company for off-site treatment. The parts then go to engine assembly where complete engines are built.

To manufacture the frame, steel parts are MIG welded into the completed frame. The frame and other steel parts go through a 9-Stage system that degreases (using alkaline cleaners) the metal and coats it with a zinc/nickel phosphate coating in preparation for Powder Painting. The painted frame then goes to final assembly. The wastewater from the 9-Stage system goes to the permitted wastewater pretreatment unit before discharge to the sanitary sewer (Outfall 001).

HSC has plastic injection molding machines to make the ATV & SxS fenders and blow mold machines to make the ATV & SxS gas tanks. The machines use a closed loop chilled water system for cooling. The blowmold section has air compressors that discharge condensate (water) through an oil removal unit to the sanitary sewer. The finished fenders and tanks go to final assembly.

Final assembly builds the ATV's in Building 1 and SxS in Building 2 adding brake fluid, antifreeze, and engine oil to the units. The completed unit is packed for shipping by the Pack Department where it is sprayed with rust inhibitor and the battery acid pack is packaged with the container. The packaged unit is loaded onto trailers and shipped to Honda warehouses.

HONDA

Honda of South Carolina Mfg., Inc.

Honda of South Carolina Mfg., Inc
1111 Honda Way
Timmons ville, SC 29161 April 2014



BLUE SKIES FOR
OUR CHILDREN

APPENDIX B

HSC RAW MATERIALS & PROCESS ADDITIVES

HSC Raw Materials & Process Additives

Weld

1. Steel parts
2. Carbon Dioxide (bulk refrigerated liquid tank)
3. Argon (bulk refrigerated liquid tank)
4. Spatter Shield
5. Simple Green (55 gallon drum)

Die Casting

1. Die Lube (300 gallon totes)
2. Glycol base hydraulic oil (300 gallon tote)
3. Aluminum Ingot (2 alloys)
4. Resin Coated Sand (bulk sacks)

Machining

1. Synthetic coolant / cutting fluids (55 gallon drums & totes)
2. Semi-synthetic coolant / cutting fluids (55 gallon drums & totes)
3. Petroleum oil cutting fluid (55 gallon drum & totes)
4. Hydraulic oils – petroleum based (55 gallon drum & totes)

Plastic – Injection & Blow Molding

1. Virgin HDPE pellets (stored in silo)
2. PVOH Plastic pellets (cubic yard boxes)
3. Colorant (colored plastic pellets) for coloring plastic (cubic yard boxes)
4. Hydraulic oil – petroleum based (55 gallon drums & totes)

Assembly

1. Honda Engine Oil 10W-30 (totes)
2. Gear Oil 80W-90 (portable tanks)
3. Honda Brake Fluid (55 gallon drums)
4. Antifreeze (ethylene glycol) – (55 gallon drums & totes)
5. Petroleum based greases (55 gallon drums)
6. Gasoline (bulk delivery & stored in 1,000 gallon AST's and 1-275 gallon AST)

Pack / Ship

1. Rust Proofer (55 gallon drum)
2. Battery Acid (plastic packs in cardboard box for shipment with each ATV)

Wastewater Pretreatment

1. Hydrochloric Acid 20°(55 gallon drum)
2. Hydrated Lime (bags)

Material Services & Facilities

1. Diesel Fuel (1 – 1,000 gallon AST and 1 – 375 gallon tank in the pump house)

HSC Raw Materials & Process Additives

Paint

1. Powder Paint (250 lb cardboard drums)
2. Touch-up Paint (aerosol cans & 1 gallon cans)
3. Alkaline Cleaner (Parco Cleaner 1523R) (55 gallon drum) Stages 1 & 2 of 9-Stage System
4. Fixodine ZX (126 lb cardboard drum) Stage 5
5. 50% Sodium Hydroxide (55 gallon drums) pH control of Stage 5
6. Accelerator 131 (55 gallon drum) Stage 6
7. Bonderite 952 Repl B (55 gallon drum) Stage 6
8. Parco Defoamer 14 (5 gallon pail) Stage 1 & 2

HONDA

Honda of South Carolina Mfg., Inc.

Honda of South Carolina Mfg., Inc
1111 Honda Way
Timmons ville, SC 29161 April 2014



BLUE SKIES FOR
OUR CHILDREN

APPENDIX C

CHANGES OVER NEXT THREE YEARS

Process Changes or Expansions During Next Three Years

Production levels are projected to remain in the same range as the last few years. A second shift for assembly would be added if production were to increase enough to warrant it. A few departments currently operate two or three shifts. The number of associates at this time is approximately 950. This number will increase if needed for production purposes.

As far as process changes are concerned, a new Power Sports model (side by side) production was added in summer of 2013. This production takes place in what was the personal watercraft building (Building 2). Projections are for SxS production to increase steadily over the next three years. The operation in Building 2 is assembly only. The frame welding, painting, and plastic manufacturing will take place in the existing ATV Building. Expansion of the SxS building is possible in the future and will include welding and painting. The number of associates working in Building 2 currently is 105. There will not be any process water from Building 2. The only water discharged from Building 2 will be the sanitary sewer from the restrooms.

HONDA

Honda of South Carolina Mfg., Inc.

Honda of South Carolina Mfg., Inc
1111 Honda Way
Timmons ville, SC 29161 April 2014



BLUE SKIES FOR
OUR CHILDREN

APPENDIX D

WASTEWATER ANALYSIS

Davis & Brown

PO Box 15038
Quinby, SC 29506
(843) 665-6746 FAX: (843) 629-1444

Certificate of Analysis

Client:	HONDA ATV PLANT - TOM BAILEY 1111 HONDAWAY TIMMONSVILLE, SC 29161	South Carolina Certification Number: 21117
Contact:	TOM BAILEY	Receipt Date: 20-Mar-14
Client #:	982	Report Date: 03-Apr-14
Sample Date:	20-Mar-14	
SDG #:	SDG-098123	Approved By: <u>Van Ward</u>
Lab Sample ID:	LSID-216853	Van Ward
Sample ID:	EFFLUENT (MONTHLY)	Lab Director

Parameter	Result	Reporting Limit	Unit	Method	Flag	Date	Time	Analyst
Flow	0.004517		MGD			3/20/2014	11:50	CD
Chemical Oxygen Demand	<20.0	20	mg/L	EPA 410.4		3/24/2014	15:20	KD
Biochemical Oxygen Demand	<2.0	2	mg/L	SM 5210B		3/20/2014	14:08	JW

Davis & Brown

PO Box 15038
Quinby, SC 29506
(843) 665-6746 FAX: (843) 629-1444

Certificate of Analysis

Client: HONDA ATV PLANT - TOM BAILEY
1111 HONDAWAY
TIMMONSVILLE, SC 29161
South Carolina Certification Number: 21117

Contact: TOM BAILEY
Client #: 982
Receipt Date: 20-Mar-14
Report Date: 03-Apr-14

Sample Date: 20-Mar-14
SDG #: SDG-098123
Lab Sample ID: LSID-216854
Sample ID: EFFLUENT(MONTHLY)(GRAB)

Approved By: Van Ward
Van Ward
Lab Director

Parameter	Reporting		Unit	Method	Flag	Date	Time	Analyst
	Result	Limit						
Flow (Instantaneous)	0.00432	0	MGD			3/20/2014	11:40	CD
Oil & Grease, Hexane	<5.0	5	mg/L	EPA 1664A		4/1/2014	15:20	CG
Temperature	14.9		C	SM 2550B		3/20/2014	11:45	CD
pH, Field (Liquids)	6.71		s.u.	SM 4500-H+B		3/20/2014	11:45	CD

REGULATORY: YES NO

CHAIN OF CUSTODY RECORD

TURNAROUND TIME: STANDARD RUSH P1 P2

CLIENT:
HONDA ATV PLANT

ADDRESS:

PHONE:

FAX:

SAMPLE ANALYSIS REQUESTED

Preservative

TYPE: Grab / Composite

TOTAL # OF CONTAINERS

BOD

COD

Oil & Grease

PROGRAM AREA

USE CODES TO INDICATE IF SAMPLE WAS

FILTERED OR PRESERVED: A = HNO₃

B = HCL D = H₂SO₄ F = FILTRATION

C = NAOH E = Na₂S₂O₃ G = ZINCACETATE

PROGRAM AREA: D = DRINKING WATER

G = GROUNDWATER S = SOLID SL = SLUDGE

W = WASTEWATER O = OTHER

PLEASE PRINT LEGIBLY

SHADED AREAS FOR LAB USE ONLY

NOTES

LAB ID

EFFLUENT(M)

START:

3-19-14 11:50 CO

FINISH:

3-20-14 11:50 CO G 2 1 1

Fill in the Number of Containers for EACH Test

EFFLUENT(M)-GRAB

START:

3-20-14 11:40 CO G 1 1

FINISH:

3-20-14 11:45 CO G

EFFLUENT-pH

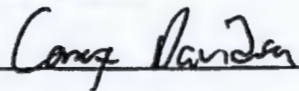
START:

3-20-14 11:45 CO G

FINISH:

3-20-14 11:45 CO G

SAMPLER SIGNATURE



COMPOSITE TEMP 5.7 °C

() TIME X FLOW PROPORTIONAL

INTERVAL BETWEEN SAMPLES 3 pulses

SAMPLE VOLUME 2.10 mls

OF SAMPLES 30

METER NUMBER

TRC

DPD LOT #

DO ph 17

FLOW INFO

9833173 -0004517

9828656

ICE YES NO PACK

RECEIPT TEMP: 35 °C

Relinquished by: Cory Davidson

Date: 3-20-14 Time: 14:35

Relinquished by:

Date: Time:

Relinquished by:

Date: Time:

Received by: Shannon Floyd

Date: 3/20/14 Time: 1435

Received by:

Date: Time:

Received by:

Date: Time:

Comments:

Davis & Brown

PO Box 15038
Quincy, SC 29506
(843) 665-6746 FAX: (843) 629-1444

Certificate of Analysis

Client: HONDA ATV PLANT - TOM BAILEY
1111 HONDAWAY
TIMMONSVILLE, SC 29161

South Carolina Certification Number: 21117

Contact: TOM BAILEY

Receipt Date: 23-Jan-14

Client #: 982

Report Date: 07-Feb-14

Sample Date: 23-Jan-14

Approved By: Van Ward

SDG #: SDG-097192

Van Ward

Lab Sample ID: LSID-214915

Lab Director

Sample ID: EFFLUENT (QUARTERLY)

Parameter	Result	Reporting		Unit	Method	Flag	Date	Time	Analyst
		Limit							
Flow	0.007190			MGD			1/23/2014	9:50	CD
Acid Digestion (Liquids)	YES				EPA 200.2		1/27/2014	1:00	JR
Cadmium, Total	<0.005	0.005		mg/L	EPA 200.7		1/31/2014	12:11	JR
Chromium, Total	<0.005	0.005		mg/L	EPA 200.7		1/31/2014	12:11	JR
Copper, Total	0.020	0.005		mg/L	EPA 200.7		1/31/2014	12:11	JR
Lead, Total	<0.005	0.005		mg/L	EPA 200.7		1/31/2014	12:11	JR
Nickel, Total	0.104	0.005		mg/L	EPA 200.7		1/31/2014	12:11	JR
Silver, Total	<0.005	0.005		mg/L	EPA 200.7		1/28/2014	14:29	JR
Zinc, Total	0.118	0.005		mg/L	EPA 200.7		1/31/2014	12:11	JR
Chemical Oxygen Demand	94.4	20		mg/L	EPA 410.4		1/27/2014	13:46	KD/BW
Biochemical Oxygen Demand	12.8	2		mg/L	SM 5210B		1/23/2014	14:14	JW

Davis & Brown

PO Box 15038
Quincy, SC 29506
(843) 665-6746 FAX: (843) 629-1444

Certificate of Analysis

Client: HONDA ATV PLANT - TOM BAILEY
1111 HONDAWAY
TIMMONSVILLE, SC 29161

South Carolina Certification Number: 21117

Contact: TOM BAILEY

Receipt Date: 23-Jan-14

Client #: 982

Report Date: 07-Feb-14

Sample Date: 23-Jan-14

SDG #: SDG-097192

Approved By: Van Ward

Lab Sample ID: LSID-214916

Van Ward

Sample ID: EFFLUENT QUARTERLY (GRAB)

Lab Director

Parameter	Reporting		Unit	Method	Flag	Date	Time	Analyst
	Result	Limit						
Flow (Instantaneous)	0.012240	0	MGD			1/23/2014	9:45	CD
Benzene	<0.001	0.001	mg/L	5035/8260B	S11A	1/29/2014	4:45	GK
BTEX, Total (Liquids)	<0.006	0.006	mg/L	5035/8260B		2/6/2014		WSF
Ethylbenzene	<0.001	0.001	mg/L	5035/8260B	S11A	1/29/2014	4:45	GK
Toluene	<0.001	0.001	mg/L	5035/8260B	S11A	1/29/2014	4:45	GK
Xylene, Total	<0.003	0.003	mg/L	5035/8260B	S11A	1/29/2014	4:45	GK
Oil & Grease, Hexane	<5.0	5	mg/L	EPA 1664A		2/3/2014	15:50	CG
Mercury, Total	<0.20	0.2	ug/L	EPA 245.1		1/30/2014	13:00	CG
Temperature	18.0		C	SM 2550B		1/23/2014	9:55	CD
Cyanide	<0.005	0.005	mg/L	SM 4500 CN-C		2/5/2014	13:59	BW
pH, Field (Liquids)	8.31		s.u.	SM 4500-H+B		1/23/2014	9:55	CD

Analytical Environmental Services, Inc

Date: 1-Feb-14

Client:	Davis & Brown	Client Sample ID:	214916
Project Name:	214916	Collection Date:	1/23/2014 9:45:00 AM
Lab ID:	1401H16-001	Matrix:	Waste Water

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
VOLATILE ORGANICS SW8260B				(SW5030B)				
Benzene	BRL	1.0		ug/L	186451	1	01/29/2014 04:45	GK
Toluene	BRL	1.0		ug/L	186451	1	01/29/2014 04:45	GK
Ethylbenzene	BRL	1.0		ug/L	186451	1	01/29/2014 04:45	GK
Xylenes, Total	BRL	3.0		ug/L	186451	1	01/29/2014 04:45	GK
Surr: 4-Bromofluorobenzene	100	66.2-120		%REC	186451	1	01/29/2014 04:45	GK

Qualifiers

- ° Value exceeds maximum contaminant level
- BRL Below reporting limit
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- > Greater than Result value

- E Estimated (value above quantitation range)
- S Spike Recovery outside limits due to matrix
- Narr See case narrative
- NC Not confirmed
- < Less than Result value
- J Estimated value detected below Reporting Limit



ACCESS
ANALYTICAL, INC.

ANALYTICAL REPORT

CLIENT

Davis & Brown
P.O. Box 15038
Quincy SC 29506

ATTENTION
Scott Fields

PROJECT ID
214916

LABORATORY REPORT NUMBER
1401H16

DATE
February 01, 2014

Primary Data Review By

CK Kanhai

Chantelle Kanhai
Project Manager, AES

Secondary Data Review By

Ashley Amick

Project Manager, Access Analytical
aamick@axs-inc.com

PLEASE NOTE:

- Unless otherwise noted, all analysis on this report performed at Analytical Environmental Services Inc. (AES Inc), 3785 Presidential Parkway, Atlanta, GA 30340.
- AES is SCDHEC certified laboratory # 98016, NCDENR certified lab # 562, GA certified lab # FL-E87582, NELAP certified laboratory # E87582
- Local support services for this project are provided by Access Analytical, Inc. Access Analytical is a representative of AES serving client in the SC/NC/GA areas. All questions regarding this report should be directed to your local Access Analytical representative at 803.781.4243 or toll free at 883.315.4243

Access / ABS

P.O. # 14-0-514

14101416



DAVIS & BROWN

124 W. Melver Road
Florence, SC 29501PH: 843-858-6748
FAX: 843-858-2208

PAGE # ____ OF ____

REGULATORY: YES NO

CHAIN OF CUSTODY RECORD

TURNAROUND TIME: _____
STANDARD _____ RUSH _____ P1
P2

CLIENT:

Davis & Brown

ADDRESS:

PHONE:

FAX:

SAMPLE ANALYSIS REQUESTED

USE CODES TO INDICATE IF SAMPLE WAS

FILTERED OR PRESERVED: A = HNO₃B = HCL D = H₂SO₄ F = FILTRATIONC = NaOH E = Na₂S₂O₃ G = ZINCACETATE

PROGRAM AREA: D = DRINKING WATER

G = GROUNDWATER S = SOLID SL = SLUDGE

W = WASTEWATER O = OTHER

PLEASE PRINT LEGIBLY

SHADED AREAS FOR LAB USE ONLY

NOTES

LAB ID

SAMPLE ID

DATE

TIME

INITIAL

TYPE: Grab / Composite

TOTAL # OF CONTAINERS

BTEX

Fill in the Number of Containers for EACH Test

214916

1/23/14 9:45

G 2 2

SAMPLER SIGNATURE

FLOW INFO

ICE
YES NO PACKRECEIPT
TEMP: 33 °C

Relinquished by:

Sharon Floyd

Date:

1/23/14

Time:

1600

Relinquished by:

Date:

1-24-14

Time:

10:28

Relinquished by:

Date:

Time:

Received by:

Date:

Time:

Received by:

Date:

1-24-14

Time:

10:28

Received by:

Date:

Time:

Comments:

Analytical Environmental Services, Inc.

Sample/Cooler Receipt Checklist

Client AECOS

Work Order Number 1401H16

Checklist completed by [Signature] Date 1.24.14

Carrier name: FedEx ☒ UPS ☐ Courier ☐ Client ☐ US Mail ☐ Other ☐

Shipping container/cooler in good condition? Yes ☒ No ☐ Not Present ☐

Custody seals intact on shipping container/cooler? Yes ☐ No ☐ Not Present ☒

Custody seals intact on sample bottles? Yes ☐ No ☐ Not Present ☒

Container/Temp Blank temperature in compliance? (4°C±2)* Yes ☒ No ☐

Cooler #1 3-3 Cooler #2 ☐ Cooler #3 ☐ Cooler #4 ☐ Cooler #5 ☐ Cooler #6 ☐

Chain of custody present? Yes ☒ No ☐

Chain of custody signed when relinquished and received? Yes ☒ No ☐

Chain of custody agrees with sample labels? Yes ☒ No ☐

Samples in proper container/bottle? Yes ☒ No ☐

Sample containers intact? Yes ☒ No ☐

Sufficient sample volume for indicated test? Yes ☒ No ☐

All samples received within holding time? Yes ☒ No ☐

Was TAT marked on the COC? Yes ☐ No ☒

Proceed with Standard TAT as per project history? Yes ☒ No ☐ Not Applicable ☐

Water - VOA vials have zero headspace? No VOA vials submitted ☐ Yes ☒ No ☐

Water - pH acceptable upon receipt? Yes ☐ No ☐ Not Applicable ☐

Adjusted? ☐ Checked by ☐

Sample Condition: Good ☒ Other(Explain) ☐

(For diffusive samples or AIHA lead) Is a known blank included? Yes ☐ No ☒

See Case Narrative for resolution of the Non-Conformance.

* Samples do not have to comply with the given range for certain parameters.

\\Quality Assurance\Checklists Procedures Sign-Off Templates\Checklists\Sample Receipt Checklists\Sample_Cooler_Receipt_Checklist

Analytical Environmental Services, Inc

Date: 1-Feb-14

Client: Davis & Brown
Project: 214916
Lab Order: 1401H16

Dates Report

Lab Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	TCLP Date	Prep Date	Analysis Date
1401H16-001A	214916	1/23/2014 9:45:00AM	Groundwater	VOLATILE ORGANICS: BTEX		01/28/2014	01/29/2014

Client: Davis & Brown
 Project Name: 214916
 Workorder: 1401H16

ANALYTICAL QC SUMMARY REPORT

BatchID: 186451

Sample ID: MB-186451	Client ID:	Units: ug/L	Prep Date: 01/28/2014	Run No: 260343							
SampleType: MBLK	TestCode: VOLATILE ORGANICS SW8260B	BatchID: 186451	Analysis Date: 01/28/2014	Seq No: 5472139							
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual

Benzene	BRL	1.0									
Ethylbenzene	BRL	1.0									
Toluene	BRL	1.0									
Xylenes, Total	BRL	2.0									
Surr: 4-Bromofluorobenzene	48.34	0	50.00		96.7	66.2	120				

Sample ID: LCS-186451	Client ID:					Units: ug/L	Prep Date: 01/28/2014	Run No: 260343			
SampleType: LCS	TestCode: VOLATILE ORGANICS	SW8260B				BatchID: 186451	Analysis Date: 01/28/2014	Seq No: 5472138			
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual

Benzene	53.04	1.0	50.00		106	74.2	129				
Ethylbenzene	52.92	1.0	50.00		106	76.6	128				
Toluene	52.24	1.0	50.00		104	74.2	129				
Xylenes, Total	157.4	2.0	150.0		105	77.6	129				
Surr: 4-Bromofluorobenzene	49.95	0	50.00		99.9	66.2	120				

Sample ID: 1401G76-018AMS	Client ID:				Units: ug/L	Prep Date: 01/28/2014	Run No: 260343				
SampleType: MS	TestCode: VOLATILE ORGANICS SW8260B				BatchID: 186451	Analysis Date: 01/28/2014	Seq No: 5472141				
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual

Benzene	24400	500	25000		97.6	70.2	138				
Ethylbenzene	24620	500	25000	420.0	96.8	71.9	133				
Toluene	23830	500	25000		95.3	70	139				
Xylenes, Total	74980	1000	75000	1395	98.1	70.7	136				
Surr: 4-Bromofluorobenzene	25060	0	25000		100	66.2	120				

Qualifiers: > Greater than Result value

BRL Below reporting limit

J Estimated value detected below Reporting Limit

Rpt Lim Reporting Limit

< Less than Result value

E Estimated (value above quantitation range)

N Analyte not NELAC certified

S Spike Recovery outside limits due to matrix

B Analyte detected in the associated method blank

H Holding times for preparation or analysis exceeded

R RPD outside limits due to matrix

Analytical Environmental Services, Inc

Date: 1-Feb-14

Client: Davis & Brown
Project Name: 214916
Workorder: 1401H16

ANALYTICAL QC SUMMARY REPORT

BatchID: 186451

Sample ID: 1401G76-018AMSD	Client ID:	Units: ug/L		Prep Date: 01/28/2014	Run No: 260343						
SampleType: MSD	TestCode: VOLATILE ORGANICS SW8260B	BatchID: 186451		Analysis Date: 01/28/2014	Seq No: 5472142						
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Benzene	24950	500	25000		99.8	70.2	138	24400	2.23	20	
Ethylbenzene	25130	500	25000	420.0	98.8	71.9	133	24620	2.05	20	
Toluene	24160	500	25000		96.6	70	139	23830	1.40	20	
Xylenes, Total	76770	1000	75000	1395	100	70.7	136	74980	2.36	20	
Surr: 4-Bromofluorobenzene	24870	0	25000		99.5	66.2	120	25060	0	0	

Qualifiers: > Greater than Result value
BRL Below reporting limit
J Estimated value detected below Reporting Limit
Rpt Lim Reporting Limit

< Less than Result value
E Estimated (value above quantitation range)
N Analyte not NELAC certified
S Spike Recovery outside limits due to matrix

B Analyte detected in the associated method blank
H Holding times for preparation or analysis exceeded
R RPD outside limits due to matrix

DAVIS & BROWN

Data Qualifiers

Within the attached report, some analytical data may be reported as Qualified Data as indicated by Data Qualifier or flag next to the result. **The data qualifier "S" indicates that the analysis was performed by another South Carolina certified lab. This table summarizes the South Carolina Lab Certification Numbers for those laboratories.**

S	South Carolina Lab Certification Number: 23101
S1	South Carolina Lab Certification Number: 93013
S2	South Carolina Lab Certification Number: 23105
S3	South Carolina Lab Certification Number: 10120
S4	South Carolina Lab Certification Number: 84002
S5	South Carolina Lab Certification Number: 32117
S6	Agricultural Service Laboratory Clemson University
S7	South Carolina Lab Certification Number: 36001
S8	Lab samples were subcontracted. See attached documentation.
S9	South Carolina Lab Certification Number: 94014001; 94014002
S10	South Carolina Lab Certification Number: 84009
S11	South Carolina Lab Certification Number: 96026; 96031; 98001; 73006; 98016 Note: S11A indicates AES Laboratory; S11G indicates GCAL Laboratory
S12	AASHTO R18 Certified
S13	South Carolina Lab Certification Number: 96012
S14	South Carolina Lab Certification Number: 89002
S15	*****
S16	South Carolina Lab Certification Number: 84004
S17	South Carolina Lab Certification Number: 96037001
S18	South Carolina Lab Certification Number: 95005
S19	South Carolina Lab Certification Number: 23104
S20	South Carolina Lab Certification Number: 96027001
S21	South Carolina Lab Certification Number: 21005
S22	South Carolina Lab Certification Number: 24110
S23	South Carolina Lab Certification Number: 84001001
S24	South Carolina Lab Certification Number: 82014001
S25	Sample was analyzed by Microseeps, Inc Laboratory
S26	North Carolina Lab Certification Number: 21 (Wilson Division NC00120)
S27	South Carolina Lab Certification Number: 40569
S28	South Carolina Lab Certification Number: 32571

HONDA

Honda of South Carolina Mfg., Inc.

Honda of South Carolina Mfg., Inc
1111 Honda Way
Timmons ville, SC 29161 April 2014



BLUE SKIES FOR
OUR CHILDREN

APPENDIX E

TTO / ANNUAL ANALYSIS

Davis & Brown

PO Box 15038
Quinby, SC 29506
(843) 665-6746 FAX: (843) 629-1444

Certificate of Analysis

Client: HONDA ATV PLANT - TOM BAILEY
1111 HONDAWAY
TIMMONSVILLE, SC 29161
South Carolina Certification Number: 21117
Contact: TOM BAILEY
Receipt Date: 17-Oct-13
Client #: 982
Report Date: 05-Nov-13

Sample Date: 17-Oct-13
SDG #: SDG-095612
Lab Sample ID: LSID-211584
Sample ID: EFFLUENT (QUARTERLY)

Approved By:

Van Ward

Van Ward
Lab Director

Parameter	Result	Reporting Limit	Unit	Method	Flag	Date	Time	Analyst
Flow	0.003090		MGD			10/17/2013	10:00	CD
Acid Digestion (Liquids)	YES			EPA 200.2		10/21/2013	1:00	JR
Cadmium, Total	<0.005	0.005	mg/L	EPA 200.7		10/21/2013	16:24	JR
Chromium, Total	<0.005	0.005	mg/L	EPA 200.7		10/21/2013	16:24	JR
Copper, Total	0.010	0.005	mg/L	EPA 200.7		10/21/2013	16:24	JR
Lead, Total	<0.005	0.005	mg/L	EPA 200.7		10/21/2013	16:24	JR
Nickel, Total	0.093	0.005	mg/L	EPA 200.7		10/21/2013	16:24	JR
Silver, Total	<0.005	0.005	mg/L	EPA 200.7		10/22/2013	12:33	JR
Zinc, Total	0.013	0.005	mg/L	EPA 200.7		10/21/2013	16:24	JR
Chemical Oxygen Demand	149	20	mg/L	EPA 410.4		10/22/2013	11:05	BW
Biochemical Oxygen Demand	34.1	2	mg/L	SM 5210B	SC	10/17/2013	14:24	BW

Davis & Brown

PO Box 15038
Quincy, SC 29506
(843) 665-6746 FAX: (843) 629-1444

Certificate of Analysis

Client: HONDA ATV PLANT - TOM BAILEY
1111 HONDAWAY
TIMMONSVILLE, SC 29161
South Carolina Certification Number: 21117

Contact: TOM BAILEY
Client #: 982
Receipt Date: 17-Oct-13
Report Date: 05-Nov-13

Sample Date: 17-Oct-13
SDG #: SDG-095612
Lab Sample ID: LSID-211585

Approved By: Van Ward
Van Ward
Lab Director

Parameter	Result	Reporting Limit	Unit	Method	Flag	Date	Time	Analyst
Flow (Instantaneous)	0.010080	0	MGD			10/17/2013	9:55	CD
Benzene	<0.002	0.002	mg/L	5035/8260B	S11	10/26/2013	15:17	NP
BTEX, Total (Liquids)	<0.011	0.011	mg/L	5035/8260B	S11	11/5/2013		WSF
Ethylbenzene	<0.002	0.002	mg/L	5035/8260B	S11	10/26/2013	15:17	NP
Toluene	<0.002	0.002	mg/L	5035/8260B	S11	10/26/2013	15:17	NP
Xylene, Total	<0.005	0.005	mg/L	5035/8260B	S11	10/26/2013	15:17	NP
Total Toxic Organics	0.120		mg/L	8260B\8270D\	S11	10/25/2013	16:52	YH
Oil & Grease, Hexane	8.1	5	mg/L	EPA 1664A		10/22/2013	15:00	CG
Mercury, Total	<0.20	0.2	ug/L	EPA 245.1		10/21/2013	14:00	CG
Temperature	27.6		C	SM 2550B		10/17/2013	9:50	CD
Cyanide	<0.005	0.005	mg/L	SM 4500 CN-		10/21/2013	14:50	BW
pH, Field (Liquids)	8.55		s.u.	SM 4500-H+B		10/17/2013	9:50	CD

Analytical Environmental Services, Inc

Date: 30-Oct-13

Client:	Davis & Brown	Client Sample ID:	211585
Project Name:	211585	Collection Date:	10/17/2013 9:55:00 AM
Lab ID:	1310174-001	Matrix:	Waste Water

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Volatile Organic Compounds by GC/MS SW8260B				(SW5030B)				
1,2,4-Trichlorobenzene	BRL	2.0		ug/L	182884	1	10/26/2013 15:17	NP
Acrolein	BRL	5.0		ug/L	182884	1	10/26/2013 15:17	NP
Acrylonitrile	BRL	5.0		ug/L	182884	1	10/26/2013 15:17	NP
Dichlorodifluoromethane	BRL	2.0		ug/L	182884	1	10/26/2013 15:17	NP
TCL-SEMIVOLATILE ORGANICS SW8270D				(E625)				
1,2-Diphenylhydrazine	BRL	50		ug/L	182861	5	10/25/2013 16:52	YH
PRIORITY POLLUTANT-VOLATILES E624				(E624)				
1,1,1-Trichloroethane	BRL	2.0		ug/L	182884	1	10/26/2013 15:17	NP
1,1,2,2-Tetrachloroethane	BRL	2.0		ug/L	182884	1	10/26/2013 15:17	NP
1,1,2-Trichloroethane	BRL	2.0		ug/L	182884	1	10/26/2013 15:17	NP
1,1-Dichloroethane	BRL	2.0		ug/L	182884	1	10/26/2013 15:17	NP
1,1-Dichloroethene	BRL	2.0		ug/L	182884	1	10/26/2013 15:17	NP
1,2-Dichlorobenzene	BRL	2.0		ug/L	182884	1	10/26/2013 15:17	NP
1,2-Dichloroethane	BRL	2.0		ug/L	182884	1	10/26/2013 15:17	NP
1,2-Dichloropropane	BRL	2.0		ug/L	182884	1	10/26/2013 15:17	NP
1,3-Dichlorobenzene	BRL	2.0		ug/L	182884	1	10/26/2013 15:17	NP
1,4-Dichlorobenzene	BRL	2.0		ug/L	182884	1	10/26/2013 15:17	NP
2-Chloroethyl vinyl ether	BRL	5.0		ug/L	182884	1	10/26/2013 15:17	NP
Benzene	BRL	2.0		ug/L	182884	1	10/26/2013 15:17	NP
Bromodichloromethane	BRL	2.0		ug/L	182884	1	10/26/2013 15:17	NP
Bromoform	BRL	2.0		ug/L	182884	1	10/26/2013 15:17	NP
Bromomethane	BRL	2.0		ug/L	182884	1	10/26/2013 15:17	NP
Carbon tetrachloride	BRL	2.0		ug/L	182884	1	10/26/2013 15:17	NP
Chlorobenzene	BRL	2.0		ug/L	182884	1	10/26/2013 15:17	NP
Chloroethane	BRL	2.0		ug/L	182884	1	10/26/2013 15:17	NP
Chloroform	BRL	2.0		ug/L	182884	1	10/26/2013 15:17	NP
Chloromethane	BRL	2.0		ug/L	182884	1	10/26/2013 15:17	NP
cis-1,3-Dichloropropene	BRL	2.0		ug/L	182884	1	10/26/2013 15:17	NP
Dibromochloromethane	BRL	2.0		ug/L	182884	1	10/26/2013 15:17	NP
Ethylbenzene	BRL	2.0		ug/L	182884	1	10/26/2013 15:17	NP
Methylene chloride	BRL	2.0		ug/L	182884	1	10/26/2013 15:17	NP
Tetrachloroethene	BRL	2.0		ug/L	182884	1	10/26/2013 15:17	NP
Toluene	BRL	2.0		ug/L	182884	1	10/26/2013 15:17	NP
trans-1,2-Dichloroethene	BRL	2.0		ug/L	182884	1	10/26/2013 15:17	NP
trans-1,3-Dichloropropene	BRL	2.0		ug/L	182884	1	10/26/2013 15:17	NP
Trichloroethene	BRL	2.0		ug/L	182884	1	10/26/2013 15:17	NP
Trichlorofluoromethane	BRL	2.0		ug/L	182884	1	10/26/2013 15:17	NP
Vinyl chloride	BRL	2.0		ug/L	182884	1	10/26/2013 15:17	NP
Xylenes, Total	BRL	5.0		ug/L	182884	1	10/26/2013 15:17	NP

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Below reporting limit
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- > Greater than Result value

- E Estimated (value above quantitation range)
- S Spike Recovery outside limits due to matrix
- Narr See case narrative
- NC Not confirmed
- < Less than Result value
- J Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc

Date: 30-Oct-13

Client: Davis & Brown
 Project Name: 211585
 Lab ID: 1310174-001

Client Sample ID: 211585
 Collection Date: 10/17/2013 9:55:00 AM
 Matrix: Waste Water

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
PRIORITY POLLUTANT-VOLATILES E624		(E624)						
Surr: 4-Bromofluorobenzene	89.4	66.2-120		%REC	182884	1	10/26/2013 15:17	NP
Surr: Dibromofluoromethane	99.5	79.5-121		%REC	182884	1	10/26/2013 15:17	NP
Surr: Toluene-d8	96.1	77-117		%REC	182884	1	10/26/2013 15:17	NP
PRIORITY POLLUTANT-SEMIVOLATILE ORGANICS E625		(E625)						
2,4,6-Trichlorophenol	BRL	50		ug/L	182861	5	10/25/2013 16:52	YH
2,4-Dichlorophenol	BRL	50		ug/L	182861	5	10/25/2013 16:52	YH
2,4-Dimethylphenol	BRL	50		ug/L	182861	5	10/25/2013 16:52	YH
2,4-Dinitrophenol	BRL	250		ug/L	182861	5	10/25/2013 16:52	YH
2,4-Dinitrotoluene	BRL	50		ug/L	182861	5	10/25/2013 16:52	YH
2,6-Dinitrotoluene	BRL	50		ug/L	182861	5	10/25/2013 16:52	YH
2-Chloronaphthalene	BRL	50		ug/L	182861	5	10/25/2013 16:52	YH
2-Chlorophenol	BRL	50		ug/L	182861	5	10/25/2013 16:52	YH
2-Nitrophenol	BRL	50		ug/L	182861	5	10/25/2013 16:52	YH
3,3'-Dichlorobenzidine	BRL	50		ug/L	182861	5	10/25/2013 16:52	YH
4,6-Dinitro-2-methylphenol	BRL	50		ug/L	182861	5	10/25/2013 16:52	YH
4-Bromophenyl phenyl ether	BRL	50		ug/L	182861	5	10/25/2013 16:52	YH
4-Chloro-3-methylphenol	BRL	50		ug/L	182861	5	10/25/2013 16:52	YH
4-Chlorophenyl phenyl ether	BRL	50		ug/L	182861	5	10/25/2013 16:52	YH
4-Nitrophenol	BRL	50		ug/L	182861	5	10/25/2013 16:52	YH
Acenaphthene	BRL	50		ug/L	182861	5	10/25/2013 16:52	YH
Acenaphthylene	BRL	50		ug/L	182861	5	10/25/2013 16:52	YH
Anthracene	BRL	50		ug/L	182861	5	10/25/2013 16:52	YH
Benz(a)anthracene	BRL	50		ug/L	182861	5	10/25/2013 16:52	YH
Benzidine	BRL	500		ug/L	182861	5	10/25/2013 16:52	YH
Benzo(a)pyrene	BRL	50		ug/L	182861	5	10/25/2013 16:52	YH
Benzo(b)fluoranthene	BRL	50		ug/L	182861	5	10/25/2013 16:52	YH
Benzo(g,h,i)perylene	BRL	50		ug/L	182861	5	10/25/2013 16:52	YH
Benzo(k)fluoranthene	BRL	50		ug/L	182861	5	10/25/2013 16:52	YH
Bis(2-chloroethoxy)methane	BRL	50		ug/L	182861	5	10/25/2013 16:52	YH
Bis(2-chloroethyl)ether	BRL	50		ug/L	182861	5	10/25/2013 16:52	YH
Bis(2-chloroisopropyl)ether	BRL	50		ug/L	182861	5	10/25/2013 16:52	YH
Bis(2-ethylhexyl)phthalate	120	50		ug/L	182861	5	10/25/2013 16:52	YH
Butyl benzyl phthalate	BRL	50		ug/L	182861	5	10/25/2013 16:52	YH
Chrysene	BRL	50		ug/L	182861	5	10/25/2013 16:52	YH
Di-n-butyl phthalate	BRL	50		ug/L	182861	5	10/25/2013 16:52	YH
Di-n-octyl phthalate	BRL	50		ug/L	182861	5	10/25/2013 16:52	YH
Dibenz(a,h)anthracene	BRL	50		ug/L	182861	5	10/25/2013 16:52	YH
Diethyl phthalate	BRL	50		ug/L	182861	5	10/25/2013 16:52	YH
Dimethyl phthalate	BRL	50		ug/L	182861	5	10/25/2013 16:52	YH
Fluoranthene	BRL	50		ug/L	182861	5	10/25/2013 16:52	YH

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Below reporting limit
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- > Greater than Result value

- E Estimated (value above quantitation range)
- S Spike Recovery outside limits due to matrix
- Narr See case narrative
- NC Not confirmed
- < Less than Result value
- J Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc

Date: 30-Oct-13

Client:	Davis & Brown	Client Sample ID:	211585
Project Name:	211585	Collection Date:	10/17/2013 9:55:00 AM
Lab ID:	1310174-001	Matrix:	Waste Water

Analytes	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
PRIORITY POLLUTANT-SEMIVOLATILE ORGANICS E625 (E625)								
Fluorene	BRL	50		ug/L	182861	5	10/25/2013 16:52	YH
Hexachlorobenzene	BRL	50		ug/L	182861	5	10/25/2013 16:52	YH
Hexachlorobutadiene	BRL	50		ug/L	182861	5	10/25/2013 16:52	YH
Hexachlorocyclopentadiene	BRL	50		ug/L	182861	5	10/25/2013 16:52	YH
Hexachloroethane	BRL	50		ug/L	182861	5	10/25/2013 16:52	YH
Indeno(1,2,3-cd)pyrene	BRL	50		ug/L	182861	5	10/25/2013 16:52	YH
Isophorone	BRL	50		ug/L	182861	5	10/25/2013 16:52	YH
N-Nitrosodi-n-propylamine	BRL	50		ug/L	182861	5	10/25/2013 16:52	YH
N-Nitrosodimethylamine	BRL	50		ug/L	182861	5	10/25/2013 16:52	YH
N-Nitrosodiphenylamine	BRL	50		ug/L	182861	5	10/25/2013 16:52	YH
Naphthalene	BRL	50		ug/L	182861	5	10/25/2013 16:52	YH
Nitrobenzene	BRL	50		ug/L	182861	5	10/25/2013 16:52	YH
Pentachlorophenol	BRL	50		ug/L	182861	5	10/25/2013 16:52	YH
Phenanthrene	BRL	50		ug/L	182861	5	10/25/2013 16:52	YH
Phenol	BRL	50		ug/L	182861	5	10/25/2013 16:52	YH
Pyrene	BRL	50		ug/L	182861	5	10/25/2013 16:52	YH
Surr: 2,4,6-Tribromophenol	59.1	50.9-150		%REC	182861	5	10/25/2013 16:52	YH
Surr: 2-Fluorobiphenyl	66.3	50.7-121		%REC	182861	5	10/25/2013 16:52	YH
Surr: 2-Fluorophenol	32.8	25.6-120		%REC	182861	5	10/25/2013 16:52	YH
Surr: 4-Terphenyl-d14	55.5	44-147		%REC	182861	5	10/25/2013 16:52	YH
Surr: Nitrobenzene-d5	69	41.6-120		%REC	182861	5	10/25/2013 16:52	YH
Surr: Phenol-d5	21	13-120		%REC	182861	5	10/25/2013 16:52	YH

Qualifiers:
 * Value exceeds maximum contaminant level
 BRL Below reporting limit
 H Holding times for preparation or analysis exceeded
 N Analyte not NELAC certified
 B Analyte detected in the associated method blank
 > Greater than Result value

E Estimated (value above quantitation range)
 S Spike Recovery outside limits due to matrix
 Narr See case narrative
 NC Not confirmed
 < Less than Result value
 J Estimated value detected below Reporting Limit



ACCESS
ANALYTICAL, INC.

ANALYTICAL REPORT

CLIENT

Davis & Brown
P.O. Box 15038
Quinby SC 29506

ATTENTION
Scott Fields

PROJECT ID
211585

LABORATORY REPORT NUMBER
1310174

DATE
October 30, 2013

Primary Data Review By

CB Kanhai

Chantelle Kanhai
Project Manager, AES

Secondary Data Review By

Ashley Amick

Project Manager, Access Analytical
aamick@axs-inc.com

PLEASE NOTE:

- Unless otherwise noted, all analysis on this report performed at Analytical Environmental Services Inc. (AES Inc), 3785 Presidential Parkway, Atlanta, GA 30340.
- AES is SCDHEC certified laboratory # 98016, NCDENR certified lab # 562, GA certified lab # FL-E87582, NELAP certified laboratory # E87582
- Local support services for this project are provided by Access Analytical, Inc. Access Analytical is a representative of AES serving client in the SC/NC/GA areas. All questions regarding this report should be directed to your local Access Analytical representative at 803.781.4243 or toll free at 883.315.4243

Access/AES

P.O.# 14-153

1310174

**DAVIS & BROWN**124 W. McIver Road
Florence, SC 29501PH: 843-665-6746
FAX: 843-656-2208 /

PAGE # ____ OF ____

REGULATORY: ☒ YES ☐ NO**CHAIN OF CUSTODY RECORD**TURNAROUND TIME: _____
STANDARD _____ RUSH _____ P1
P2

CLIENT:

ADDRESS:

PHONE:

FAX:

SAMPLE ANALYSIS REQUESTED

USE CODES TO INDICATE IF SAMPLE WAS

FILTERED OR PRESERVED: A = HNO₃B = HCL D = H₂SO₄ F = FILTRATIONC = NAOH E = NA₂S₂O₃ G = ZINCACETATE

PROGRAM AREA: D = DRINKING WATER

G = GROUNDWATER S = SOLID SL = SLUDGE

W = WASTEWATER O = OTHER

PLEASE PRINT LEGIBLY

SHADED AREAS FOR LAB USE ONLY

NOTES

LAB ID

SAMPLE ID

DATE

TIME

INITIAL

TYPE: Grab / Composite

TOTAL # OF CONTAINERS

Preservative:

TTO semi vol.

BTEX

TTO vol.

PROGRAM AREA

21585

10/13/13 955

G 4 1 1 2

W

SAMPLER SIGNATURE

FLOW INFO

ICE YES NO ICE PACK

RECEIPT TEMP 3.5°C

Relinquished by:

Date:

Time:

Relinquished by:

Date:

Time:

Relinquished by:

Date:

Time:

Received by:

Date:

Time:

Received by:

Date:

Time:

Received by:

Date:

Time:

Comments:

Client: Davis & Brown
Project: 211585
Lab ID: 1310174

Case Narrative

Semi Volatile Organic Analysis by Method 625:

LCS-182861 recovery for Dimethylphthalate was outside control limits biased high. Target analyte was not detected in the analytical samples, and data is reportable with high bias.

Due to sample matrix, sample 1310174-001B required dilution during analysis resulting in elevated reporting limits.

Analytical Environmental Services, Inc.

Sample/Cooler Receipt Checklist

Client Access Analytical Work Order Number 1310I74

Checklist completed by [Signature] Date 10/23/13
Signature Date

Carrier name: FedEx ☒ UPS ☐ Courier ☐ Client ☐ US Mail ☐ Other ☐

Shipping container/cooler in good condition? Yes ☒ No ☐ Not Present ☐

Custody seals intact on shipping container/cooler? Yes ☐ No ☐ Not Present ☒

Custody seals intact on sample bottles? Yes ☐ No ☐ Not Present ☒

Container/Temp Blank temperature in compliance? ($4^{\circ}\text{C} \pm 2$)^{*} Yes ☒ No ☐

Cooler #1 3.5 Cooler #2 ☐ Cooler #3 ☐ Cooler #4 ☐ Cooler #5 ☐ Cooler #6 ☐

Chain of custody present? Yes ☒ No ☐

Chain of custody signed when relinquished and received? Yes ☒ No ☐

Chain of custody agrees with sample labels? Yes ☒ No ☐

Samples in proper container/bottle? Yes ☒ No ☐

Sample containers intact? Yes ☒ No ☐

Sufficient sample volume for indicated test? Yes ☒ No ☐

All samples received within holding time? Yes ☒ No ☐

Was TAT marked on the COC? Yes ☐ No ☒

Proceed with Standard TAT as per project history? Yes ☒ No ☐ Not Applicable ☐

Water - VOA vials have zero headspace? No VOA vials submitted ☐ Yes ☒ No ☐

Water - pH acceptable upon receipt? Yes ☒ No ☐ Not Applicable ☐

Adjusted? ☐ Checked by W

Sample Condition: Good ☒ Other(Explain) ☐

(For diffusive samples or AIHA lead) Is a known blank included? Yes ☐ No ☒

See Case Narrative for resolution of the Non-Conformance.

^{*} Samples do not have to comply with the given range for certain parameters.

\\Quality Assurance\Checklists Procedures Sign-Off Templates\Checklists\Sample Receipt Checklists\Sample_Cooler_Receipt_Checklist

Analytical Environmental Services, Inc

Date: 30-Oct-13

Client: Davis & Brown
Project: 211585
Lab Order: 1310174

Dates Report

Lab Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	TCLP Date	Prep Date	Analysis Date
1310174-001A	211585	10/17/2013 9:55:00AM	Waste Water	PP-VOLATILES		10/25/2013	10/26/2013
1310174-001A	211585	10/17/2013 9:55:00AM	Waste Water	PP-VOLATILES		10/25/2013	10/26/2013
1310174-001A	211585	10/17/2013 9:55:00AM	Waste Water	Volatile Organic Compounds by GC/MS		10/25/2013	10/26/2013
1310174-001B	211585	10/17/2013 9:55:00AM	Waste Water	PP-SEMIVOLATILE ORGANICS		10/24/2013	10/25/2013
1310174-001B	211585	10/17/2013 9:55:00AM	Waste Water	TCL-SEMIVOLATILE ORGANICS		10/24/2013	10/25/2013

CLIENT: Davis & Brown

Work Order: 1310174

Project: 211585

ANALYTICAL QC SUMMARY REPORT

TestCode: PRIORITY POLLUTANT-VOLATILES E624

Sample ID: MB-182884	SampType: MBLK	Batch ID: 182884	Units: ug/L	Prep Date: 10/25/2013	RunNo: 254599						
Client ID:	TestCode: PRIORITY POLLUTANT-VOLATILES	E624		Analysis Date: 10/25/2013	SeqNo: 5346199						
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1,1-Trichloroethane	BRL	2.0	0	0	0	0	0	0	0		
1,1,2,2-Tetrachloroethane	BRL	2.0	0	0	0	0	0	0	0		
1,1,2-Trichloroethane	BRL	2.0	0	0	0	0	0	0	0		
1,1-Dichloroethane	BRL	2.0	0	0	0	0	0	0	0		
1,1-Dichloroethene	BRL	2.0	0	0	0	0	0	0	0		
1,2-Dichlorobenzene	BRL	2.0	0	0	0	0	0	0	0		
1,2-Dichloroethane	BRL	2.0	0	0	0	0	0	0	0		
1,2-Dichloropropane	BRL	2.0	0	0	0	0	0	0	0		
1,3-Dichlorobenzene	BRL	2.0	0	0	0	0	0	0	0		
1,4-Dichlorobenzene	BRL	2.0	0	0	0	0	0	0	0		
2-Chloroethyl vinyl ether	BRL	5.0	0	0	0	0	0	0	0		
Benzene	BRL	2.0	0	0	0	0	0	0	0		
Bromodichloromethane	BRL	2.0	0	0	0	0	0	0	0		
Bromoform	BRL	2.0	0	0	0	0	0	0	0		
Bromomethane	BRL	2.0	0	0	0	0	0	0	0		
Carbon tetrachloride	BRL	2.0	0	0	0	0	0	0	0		
Chlorobenzene	BRL	2.0	0	0	0	0	0	0	0		
Chloroethane	BRL	2.0	0	0	0	0	0	0	0		
Chloroform	BRL	2.0	0	0	0	0	0	0	0		
Chloromethane	BRL	2.0	0	0	0	0	0	0	0		
cis-1,3-Dichloropropene	BRL	2.0	0	0	0	0	0	0	0		
Dibromochloromethane	BRL	2.0	0	0	0	0	0	0	0		
Ethylbenzene	BRL	2.0	0	0	0	0	0	0	0		
Methylene chloride	BRL	2.0	0	0	0	0	0	0	0		
Tetrachloroethene	BRL	2.0	0	0	0	0	0	0	0		
Toluene	BRL	2.0	0	0	0	0	0	0	0		
trans-1,2-Dichloroethane	BRL	2.0	0	0	0	0	0	0	0		

Qualifiers: < Less than Result value

BRL Below Reporting Limit

J Estimated value detected below Reporting Limit

Rpt Lim Reporting Limit

> Greater than Result value

E Estimated value above quantitation range

N Analyte not NELAC certified

S Spike Recovery outside limits due to matrix

B Analyte detected in the associated Method Blank

H Holding times for preparation or analysis exceeded

R RPD outside limits due to matrix

CLIENT: Davis & Brown
 Work Order: 1310174
 Project: 211585

ANALYTICAL QC SUMMARY REPORT

TestCode: PRIORITY POLLUTANT-VOLATILES E624

Sample ID: MB-182884	SampType: MBLK	Batch ID: 182884	Units: ug/L	Prep Date: 10/25/2013	RunNo: 254599						
Client ID:	TestCode: PRIORITY POLLUTANT-VOLATILES	E624		Analysis Date: 10/25/2013	SeqNo: 5346199						
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
trans-1,3-Dichloropropene	BRL	2.0	0	0	0	0	0	0	0		
Trichloroethane	BRL	2.0	0	0	0	0	0	0	0		
Trichlorofluoromethane	BRL	2.0	0	0	0	0	0	0	0		
Vinyl chloride	BRL	2.0	0	0	0	0	0	0	0		
Surr: 4-Bromofluorobenzene	45.42	0	50	0	90.8	66.2	120	0	0		
Surr: Dibromofluoromethane	48.64	0	50	0	97.3	79.5	121	0	0		
Surr: Toluene-d8	48.14	0	50	0	96.3	77	117	0	0		

Sample ID: LCS-182884	SampType: LCS	Batch ID: 182884	Units: ug/L	Prep Date: 10/25/2013	RunNo: 254599						
Client ID:	TestCode: PRIORITY POLLUTANT-VOLATILES	E624		Analysis Date: 10/25/2013	SeqNo: 5345715						
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1,1-Trichloroethane	21.41	2.0	20	0	107	75	125	0	0		
1,1,2,2-Tetrachloroethane	20.19	2.0	20	0	101	61	140	0	0		
1,1,2-Trichloroethane	21.48	2.0	20	0	107	71	129	0	0		
1,1-Dichloroethane	20.07	2.0	20	0	100	73	128	0	0		
1,1-Dichloroethene	20.51	2.0	20	0	103	51	150	0	0		
1,2-Dichlorobenzene	19.05	2.0	20	0	95.2	63	137	0	0		
1,2-Dichloroethane	21.31	2.0	20	0	107	68	132	0	0		
1,2-Dichloropropane	22.61	2.0	20	0	113	34	166	0	0		
1,3-Dichlorobenzene	19.09	2.0	20	0	95.4	73	127	0	0		
1,4-Dichlorobenzene	18.4	2.0	20	0	92	63	137	0	0		
2-Chloroethyl vinyl ether	45.21	5.0	40	0	113	1	224	0	0		
Benzene	20.49	2.0	20	0	102	64	136	0	0		
Bromodichloromethane	21.86	2.0	20	0	109	68	135	0	0		
Bromoform	22.53	2.0	20	0	113	71	129	0	0		
Bromomethane	18.99	2.0	20	0	95	14	186	0	0		
Carbon tetrachloride	21.72	2.0	20	0	109	73	127	0	0		

Qualifiers:	<	Less than Result value	>	Greater than Result value	B	Analyte detected in the associated Method Blank
	BRL	Below Reporting Limit	E	Estimated value above quantitation range	II	Holding times for preparation or analysis exceeded
	J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
	Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

CLIENT: Davis & Brown
Work Order: 1310174
Project: 211585

ANALYTICAL QC SUMMARY REPORT

TestCode: PRIORITY POLLUTANT-VOLATILES E624

Sample ID: LCS-182884	SampType: LCS	Batch ID: 182884	Units: ug/L	Prep Date: 10/25/2013	RunNo: 254599						
Client ID:	TestCode: PRIORITY POLLUTANT-VOLATILES	E624	Analysis Date: 10/25/2013	SeqNo: 5345715							
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chlorobenzene	19.82	2.0	20	0	99.1	66	134	0	0		
Chloroethane	17.38	2.0	20	0	88.9	38	162	0	0		
Chloroform	20.49	2.0	20	0	102	68	133	0	0		
Chloromethane	16.75	2.0	20	0	83.8	1	204	0	0		
cis-1,3-Dichloropropene	22	2.0	20	0	110	24	176	0	0		
Dibromochloromethane	21.36	2.0	20	0	107	68	133	0	0		
Ethylbenzene	20.63	2.0	20	0	103	59	141	0	0		
Methylene chloride	20.28	2.0	20	0	101	61	140	0	0		
Tetrachloroethene	19.83	2.0	20	0	99.2	74	127	0	0		
Toluene	20.64	2.0	20	0	103	75	126	0	0		
trans-1,2-Dichloroethene	19.76	2.0	20	0	98.8	70	131	0	0		
trans-1,3-Dichloropropene	22.5	2.0	20	0	112	50	150	0	0		
Trichloroethene	18.84	2.0	20	0	94.2	67	134	0	0		
Trichlorofluoromethane	22.77	2.0	20	0	114	48	152	0	0		
Vinyl chloride	20.04	2.0	20	0	100	4	196	0	0		
Surr: 4-Bromofluorobenzene	51.5	0	50	0	103	66.2	120	0	0		
Surr: Dibromofluoromethane	49.54	0	50	0	99.1	79.5	121	0	0		
Surr: Toluene-d8	52.3	0	50	0	105	77	117	0	0		

Sample ID: 1310G23-001AMS	SampType: MS	Batch ID: 182884	Units: ug/L	Prep Date: 10/25/2013	RunNo: 254599						
Client ID:	TestCode: PRIORITY POLLUTANT-VOLATILES	E624		Analysis Date: 10/25/2013	SeqNo: 5346474						
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1,1-Trichloroethane	19.07	2.0	20	0	95.4	52	162	0	0		
1,1,2,2-Tetrachloroethane	18.58	2.0	20	0	92.8	46	157	0	0		
1,1,2-Trichloroethane	19.96	2.0	20	0	99.8	52	150	0	0		
1,1-Dichloroethane	18.7	2.0	20	0	93.5	59	155	0	0		
1,1-Dichloroethene	18.64	2.0	20	0	93.2	1	234	0	0		

Qualifiers:	<	Less than Result value	>	Greater than Result value	B	Analyte detected in the associated Method Blank
	BRL	Below Reporting Limit	E	Estimated value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
	Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

CLIENT: Davis & Brown
 Work Order: 1310174
 Project: 211585

ANALYTICAL QC SUMMARY REPORT

TestCode: PRIORITY POLLUTANT-VOLATILES E624

Sample ID: 1310G23-001AMS	SampType: MS	Batch ID: 182884	Units: ug/L	Prep Date: 10/26/2013	RunNo: 254599						
Client ID:	TestCode: PRIORITY POLLUTANT-VOLATILES	E624		Analysis Date: 10/26/2013	SeqNo: 6346474						
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2-Dichlorobenzene	17.53	2.0	20	0	87.6	18	190	0	0		
1,2-Dichloroethane	19.76	2.0	20	0	98.8	49	155	0	0		
1,2-Dichloropropane	20.9	2.0	20	0	104	1	210	0	0		
1,3-Dichlorobenzene	17.92	2.0	20	0	89.6	59	156	0	0		
1,4-Dichlorobenzene	16.91	2.0	20	0	84.6	18	190	0	0		
2-Chloroethyl vinyl ether	41.8	5.0	40	0	104	1	305	0	0		
Benzene	19.47	2.0	20	0	97.4	37	151	0	0		
Bromodichloromethane	19.99	2.0	20	0	100	35	155	0	0		
Bromoform	19.28	2.0	20	0	96.4	45	169	0	0		
Bromomethane	17.34	2.0	20	0	86.7	1	242	0	0		
Carbon tetrachloride	20.01	2.0	20	0	100	70	140	0	0		
Chlorobenzene	18.52	2.0	20	0	92.6	34	160	0	0		
Chloroethane	16.19	2.0	20	0	81	14	230	0	0		
Chloroform	18.23	2.0	20	0	91.2	51	138	0	0		
Chloromethane	15.19	2.0	20	0	76	1	273	0	0		
cis-1,3-Dichloropropene	17.78	2.0	20	0	88.9	1	227	0	0		
Dibromochloromethane	18.87	2.0	20	0	94.4	53	149	0	0		
Ethylbenzene	18.95	2.0	20	0	94.8	37	162	0	0		
Methylene chloride	15.64	2.0	20	0	78.2	1	221	0	0		
Tetrachloroethene	18.29	2.0	20	0	91.4	64	148	0	0		
Toluene	19.88	2.0	20	0	99.4	47	150	0	0		
trans-1,2-Dichloroethene	18.25	2.0	20	0	91.2	54	156	0	0		
trans-1,3-Dichloropropene	19.94	2.0	20	0	99.7	17	183	0	0		
Trichloroethene	17.62	2.0	20	0	88.1	71	157	0	0		
Trichlorofluoromethane	20.09	2.0	20	0	100	17	181	0	0		
Vinyl chloride	17.95	2.0	20	0	89.8	1	251	0	0		
Surr: 4-Bromofluorobenzene	52.28	0	50	0	105	66.2	120	0	0		
Surr: Dibromofluoromethane	49.81	0	50	0	99.8	79.5	121	0	0		

Qualifiers:	<	Less than Result value	>	Greater than Result value	B	Analyte detected in the associated Method Blank
	BRL	Below Reporting Limit	E	Estimated value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
	Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

CLIENT: Davis & Brown
 Work Order: 1310174
 Project: 211585

ANALYTICAL QC SUMMARY REPORT

TestCode: PRIORITY POLLUTANT-VOLATILES E624

Sample ID: 1310G23-001AMS	SampType: MS	Batch ID: 182884	Units: ug/L	Prep Date: 10/25/2013	RunNo: 254599						
Client ID:	TestCode: PRIORITY POLLUTANT-VOLATILES	E624		Analysis Date: 10/25/2013	SeqNo: 5346474						
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Surr: Toluene-d8	53.51	0	50	0	107	77	117	0	0		
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Sample ID: 1310G23-001AMSD	SampType: MSD	Batch ID: 182884	Units: ug/L	Prep Date: 10/25/2013	RunNo: 254599						
Client ID:	TestCode: PRIORITY POLLUTANT-VOLATILES	E624	Analysis Date: 10/25/2013	SeqNo: 5346476							
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

1,1,1-Trichloroethane	21.05	2.0	20	0	105	52	162	19.07	9.87	23	
1,1,2,2-Tetrachloroethane	19.53	2.0	20	0	97.6	46	157	18.58	5.09	37	
1,1,2-Trichloroethane	22.27	2.0	20	0	111	52	150	19.96	10.9	27.5	
1,1-Dichloroethane	20.57	2.0	20	0	103	59	155	18.7	9.52	25.5	
1,1-Dichloroethene	20.15	2.0	20	0	101	1	234	18.64	7.79	45.5	
1,2-Dichlorobenzene	18.51	2.0	20	0	92.6	18	190	17.53	5.44	35.5	
1,2-Dichloroethane	22.25	2.0	20	0	111	49	155	19.76	11.9	30	
1,2-Dichloropropane	22.72	2.0	20	0	114	1	210	20.9	8.34	69	
1,3-Dichlorobenzene	18.49	2.0	20	0	92.5	59	156	17.92	3.13	27.5	
1,4-Dichlorobenzene	18.23	2.0	20	0	91.2	18	190	16.91	7.51	35.5	
2-Chloroethyl vinyl ether	45.44	5.0	40	0	114	1	305	41.8	8.34	130	
Benzene	21.33	2.0	20	0	107	37	151	19.47	9.12	34.5	
Bromodichloromethane	21.95	2.0	20	0	110	35	165	19.99	9.35	32	
Bromoform	19.84	2.0	20	0	99.2	45	169	19.28	2.86	27	
Bromomethane	19.29	2.0	20	0	98.5	1	242	17.34	10.6	89.5	
Carbon tetrachloride	22.21	2.0	20	0	111	70	140	20.01	10.4	26	
Chlorobenzene	19.85	2.0	20	0	98.2	34	160	18.52	6.93	31.5	
Chloroethane	18.01	2.0	20	0	90	14	230	16.19	10.6	57	
Chloroform	20.73	2.0	20	0	104	51	138	18.23	12.8	30.5	
Chloromethane	17.02	2.0	20	0	85.1	1	273	15.19	11.4	99	
cis-1,3-Dichloropropene	19.67	2.0	20	0	98.4	1	227	17.78	10.1	79	
Dibromochloromethane	20.39	2.0	20	0	102	53	149	18.87	7.74	30.5	

Qualifiers:	<	Less than Result value	>	Greater than Result value	B	Analyte detected in the associated Method Blank
	BRL	Below Reporting Limit	E	Estimated value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
	Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

CLIENT: Davis & Brown
 Work Order: 1310174
 Project: 211585

ANALYTICAL QC SUMMARY REPORT

TestCode: PRIORITY POLLUTANT-VOLATILES E624

Sample ID: 1310G23-001AMSD	SampType: MSD	Batch ID: 182884		Units: ug/L	Prep Date: 10/25/2013				RunNo: 254599		
Client ID:	TestCode: PRIORITY POLLUTANT-VOLATILES	E624		Analysis Date: 10/25/2013				SeqNo: 5346476			
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Ethylbenzene	20.91	2.0	20	0	105	37	162	18.95	9.83	37.5	
Methylene chloride	17.47	2.0	20	0	87.4	1	221	15.64	11.1	37	
Tetrachloroethene	19.48	2.0	20	0	97.4	64	148	18.29	6.30	25	
Toluene	21.94	2.0	20	0	110	47	150	19.88	9.85	24	
trans-1,2-Dichloroethene	20.66	2.0	20	0	103	54	156	18.25	12.4	28.5	
trans-1,3-Dichloropropene	22.18	2.0	20	0	111	17	183	19.94	10.6	52	
Trichloroethene	19.09	2.0	20	0	95.4	71	157	17.62	8.01	33	
Trichlorofluoromethane	22.11	2.0	20	0	111	17	181	20.09	9.57	50	
Vinyl chloride	20.42	2.0	20	0	102	1	251	17.95	12.9	100	
Surr: 4-Bromofluorobenzene	52.25	0	50	0	104	66.2	120	52.28	0	0	
Surr: Dibromofluoromethane	50.91	0	50	0	102	79.5	121	49.81	0	0	
Surr: Toluene-d8	53.49	0	50	0	107	77	117	53.51	0	0	

Qualifiers:	<	Less than Result value:	>	Greater than Result value	B	Analyte detected in the associated Method Blank
	BRL	Below Reporting Limit	E	Estimated value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
	Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

CLIENT: Davis & Brown
 Work Order: 1310174
 Project: 211585

ANALYTICAL QC SUMMARY REPORT

TestCode: PRIORITY POLLUTANT-VOLATILES E624

Sample ID: MB-182884	SampType: MBLK	Batch ID: 182884	Units: ug/L	Prep Date: 10/25/2013	RunNo: 254599						
Client ID:	TestCode: PRIORITY POLLUTANT-VOLATILES	E624	Analysis Date: 10/25/2013	SeqNo: 5346521							
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1,1-Trichloroethane	BRL	5.0	0	0	0	0	0	0	0		
1,1,2,2-Tetrachloroethane	BRL	5.0	0	0	0	0	0	0	0		
1,1,2-Trichloroethane	BRL	5.0	0	0	0	0	0	0	0		
1,1-Dichloroethane	BRL	5.0	0	0	0	0	0	0	0		
1,1-Dichloroethene	BRL	5.0	0	0	0	0	0	0	0		
1,2-Dichlorobenzene	BRL	5.0	0	0	0	0	0	0	0		
1,2-Dichloroethane	BRL	5.0	0	0	0	0	0	0	0		
1,2-Dichloropropane	BRL	5.0	0	0	0	0	0	0	0		
1,3-Dichlorobenzene	BRL	5.0	0	0	0	0	0	0	0		
1,4-Dichlorobenzene	BRL	5.0	0	0	0	0	0	0	0		
2-Chloroethyl vinyl ether	BRL	5.0	0	0	0	0	0	0	0		
Benzene	BRL	5.0	0	0	0	0	0	0	0		
Bromodichloromethane	BRL	5.0	0	0	0	0	0	0	0		
Bromoform	BRL	5.0	0	0	0	0	0	0	0		
Bromomethane	BRL	5.0	0	0	0	0	0	0	0		
Carbon tetrachloride	BRL	5.0	0	0	0	0	0	0	0		
Chlorobenzene	BRL	5.0	0	0	0	0	0	0	0		
Chloroethane	BRL	10	0	0	0	0	0	0	0		
Chloroform	BRL	5.0	0	0	0	0	0	0	0		
Chloromethane	BRL	10	0	0	0	0	0	0	0		
cis-1,3-Dichloropropene	BRL	5.0	0	0	0	0	0	0	0		
Dibromochloromethane	BRL	5.0	0	0	0	0	0	0	0		
Dichlorodifluoromethane	BRL	10	0	0	0	0	0	0	0		
Ethylbenzene	BRL	5.0	0	0	0	0	0	0	0		
Methylene chloride	BRL	5.0	0	0	0	0	0	0	0		
Tetrachloroethene	BRL	5.0	0	0	0	0	0	0	0		
Toluene	BRL	5.0	0	0	0	0	0	0	0		
trans-1,2-Dichloroethene	BRL	5.0	0	0	0	0	0	0	0		

Qualifiers:	<	Less than Result value	>	Greater than Result value	B	Analyte detected in the associated Method Blank
	BRL	Below Reporting Limit	E	Estimated value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
	Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

CLIENT: Davis & Brown
 Work Order: 1310174
 Project: 211585

ANALYTICAL QC SUMMARY REPORT

TestCode: PRIORITY POLLUTANT-VOLATILES E624

Sample ID: MB-182884	SampType: MBLK	Batch ID: 182884	Units: ug/L	Prep Date: 10/25/2013	RunNo: 254599						
Client ID:	TestCode: PRIORITY POLLUTANT-VOLATILES	E624	Analysis Date: 10/25/2013	SeqNo: 5346521							
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
trans-1,3-Dichloropropene	BRL	5.0	0	0	0	0	0	0	0		
Trichloroethene	BRL	5.0	0	0	0	0	0	0	0		
Trichlorofluoromethane	BRL	5.0	0	0	0	0	0	0	0		
Vinyl chloride	BRL	2.0	0	0	0	0	0	0	0		
Xylenes, Total	BRL	5.0	0	0	0	0	0	0	0		
Surr: 4-Bromofluorobenzene	45.42	0	50	0	90.8	66.2	120	0	0		
Surr: Dibromofluoromethane	48.64	0	50	0	97.3	79.5	121	0	0		
Surr: Toluene-d8	48.14	0	50	0	96.3	77	117	0	0		

Sample ID: LCS-182884	SampType: LCS	Batch ID: 182884	Units: ug/L	Prep Date: 10/25/2013	RunNo: 254599						
Client ID:	TestCode: PRIORITY POLLUTANT-VOLATILES	E624		Analysis Date: 10/25/2013	SeqNo: 5346516						
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1,1-Trichloroethane	21.41	5.0	20	0	107	75	125	0	0		
1,1,2,2-Tetrachloroethane	20.19	5.0	20	0	101	61	140	0	0		
1,1,2-Trichloroethane	21.48	5.0	20	0	107	71	129	0	0		
1,1-Dichloroethane	20.07	5.0	20	0	100	73	128	0	0		
1,1-Dichloroethene	20.51	5.0	20	0	103	51	150	0	0		
1,2-Dichlorobenzene	19.05	5.0	20	0	95.2	63	137	0	0		
1,2-Dichloroethane	21.31	5.0	20	0	107	68	132	0	0		
1,2-Dichloropropane	22.61	5.0	20	0	113	34	166	0	0		
1,3-Dichlorobenzene	19.09	5.0	20	0	95.4	73	127	0	0		
1,4-Dichlorobenzene	18.4	5.0	20	0	92	63	137	0	0		
2-Chloroethyl vinyl ether	45.21	5.0	40	0	113	1	224	0	0		
Benzene	20.49	5.0	20	0	102	64	136	0	0		
Bromodichloromethane	21.86	5.0	20	0	109	66	135	0	0		
Bromoform	22.63	5.0	20	0	113	71	129	0	0		
Bromomethane	18.99	5.0	20	0	95	14	186	0	0		

Qualifiers:	<	Less than Result value	>	Greater than Result value	B	Analyte detected in the associated Method Blank
	BRL	Below Reporting Limit	E	Estimated value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
	Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

CLIENT: Davis & Brown
Work Order: 1310174
Project: 211585

ANALYTICAL QC SUMMARY REPORT

TestCode: PRIORITY POLLUTANT-VOLATILES E624

Sample ID: LCS-182884	SampType: LCS	Batch ID: 182884	Units: ug/L	Prep Date: 10/25/2013	RunNo: 254599						
Client ID:	TestCode: PRIORITY POLLUTANT-VOLATILES	E624	Analysis Date: 10/26/2013	SeqNo: 5346516							
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Carbon tetrachloride	21.72	5.0	20	0	109	73	127	0	0		
Chlorobenzene	19.82	5.0	20	0	99.1	66	134	0	0		
Chloroethane	17.38	10	20	0	86.9	38	162	0	0		
Chloroform	20.49	5.0	20	0	102	68	133	0	0		
Chloromethane	16.75	10	20	0	83.8	1	204	0	0		
cis-1,3-Dichloropropene	22	5.0	20	0	110	24	178	0	0		
Dibromochloromethane	21.36	5.0	20	0	107	68	133	0	0		
Dichlorodifluoromethane	14.41	10	20	0	72	50.7	130	0	0		
Ethylbenzene	20.83	5.0	20	0	103	59	141	0	0		
Methylene chloride	20.26	5.0	20	0	101	61	140	0	0		
Tetrachloroethene	19.83	5.0	20	0	99.2	74	127	0	0		
Toluene	20.64	5.0	20	0	103	75	126	0	0		
trans-1,2-Dichloroethene	19.76	5.0	20	0	98.8	70	131	0	0		
trans-1,3-Dichloropropene	22.5	5.0	20	0	112	50	150	0	0		
Trichloroethene	18.84	5.0	20	0	94.2	67	134	0	0		
Trichlorofluoromethane	22.77	5.0	20	0	114	48	152	0	0		
Vinyl chloride	20.04	2.0	20	0	100	4	196	0	0		
Surr: 4-Bromofluorobenzene	51.5	0	50	0	103	66.2	120	0	0		
Surr: Dibromofluoromethane	49.54	0	50	0	99.1	79.5	121	0	0		
Surr: Toluene-d8	52.3	0	50	0	106	77	117	0	0		

Sample ID: 1310G23-001AMS	SampType: MS	Batch ID: 182884	Units: ug/L	Prep Date: 10/25/2013	RunNo: 254599						
Client ID:	TestCode: PRIORITY POLLUTANT-VOLATILES	E624	Analysis Date: 10/25/2013	SeqNo: 5346527							
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1,1-Trichloroethane	19.07	5.0	20	0	95.4	52	162	0	0		
1,1,2,2-Tetrachloroethane	18.56	5.0	20	0	92.8	46	157	0	0		
1,1,2-Trichloroethane	19.98	5.0	20	0	99.8	52	150	0	0		

Qualifiers:	<	Less than Result value	>	Greater than Result value	B	Analyte detected in the associated Method Blank
	BRL	Below Reporting Limit	E	Estimated value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
	Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

CLIENT: Davis & Brown
 Work Order: 1310174
 Project: 211585

ANALYTICAL QC SUMMARY REPORT

TestCode: PRIORITY POLLUTANT-VOLATILES E624

Sample ID: 1310G23-001AMS	SampType: MS	Batch ID: 182884	Units: ug/L	Prep Date: 10/25/2013	RunNo: 254599						
Client ID:	TestCode: PRIORITY POLLUTANT-VOLATILES	E624	Analysis Date: 10/25/2013	SeqNo: 5346527							
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethane	18.7	5.0	20	0	93.5	59	155	0	0		
1,1-Dichloroethene	18.84	5.0	20	0	93.2	1	234	0	0		
1,2-Dichlorobenzene	17.53	5.0	20	0	87.6	18	190	0	0		
1,2-Dichloroethane	19.76	5.0	20	0	98.8	49	155	0	0		
1,2-Dichloropropane	20.9	5.0	20	0	104	1	210	0	0		
1,3-Dichlorobenzene	17.92	5.0	20	0	89.6	59	156	0	0		
1,4-Dichlorobenzene	16.91	5.0	20	0	84.6	18	190	0	0		
2-Chloroethyl vinyl ether	41.8	5.0	20	0	209	1	305	0	0		
Benzene	19.47	5.0	20	0	97.4	37	151	0	0		
Bromodichloromethane	19.99	5.0	20	0	100	35	155	0	0		
Bromoform	19.28	5.0	20	0	96.4	45	169	0	0		
Bromomethane	17.34	5.0	20	0	86.7	1	242	0	0		
Carbon tetrachloride	20.01	5.0	20	0	100	70	140	0	0		
Chlorobenzene	18.52	5.0	20	0	92.6	34	160	0	0		
Chloroethane	16.19	10	20	0	81	14	230	0	0		
Chloroform	18.23	5.0	20	0	91.2	51	138	0	0		
Chloromethane	15.19	10	20	0	76	1	273	0	0		
cis-1,3-Dichloropropene	17.78	5.0	20	0	88.9	1	227	0	0		
Dibromochloromethane	18.87	5.0	20	0	94.4	53	149	0	0		
Ethylbenzene	18.95	5.0	20	0	94.8	37	162	0	0		
Methylene chloride	15.64	5.0	20	0	78.2	1	221	0	0		
Tetrachloroethene	18.29	5.0	20	0	91.4	64	148	0	0		
Toluene	19.88	5.0	20	0	99.4	47	150	0	0		
trans-1,2-Dichloroethene	18.25	5.0	20	0	91.2	54	156	0	0		
trans-1,3-Dichloropropene	19.94	5.0	20	0	99.7	17	183	0	0		
Trichloroethene	17.62	5.0	20	0	88.1	71	157	0	0		
Trichlorofluoromethane	20.09	5.0	20	0	100	17	181	0	0		
Vinyl chloride	17.85	2.0	20	0	89.8	1	251	0	0		

Qualifiers: < Less than Result value
 BRL Below Reporting Limit
 J Estimated value detected below Reporting Limit
 Rpt Lim Reporting Limit

> Greater than Result value
 E Estimated value above quantitation range
 N Analyte not NELAC certified
 S Spike Recovery outside limits due to matrix

B Analyte detected in the associated Method Blank
 H Holding times for preparation or analysis exceeded
 R RPD outside limits due to matrix

CLIENT: Davis & Brown
 Work Order: 1310174
 Project: 211585

ANALYTICAL QC SUMMARY REPORT

TestCode: PRIORITY POLLUTANT-VOLATILES E624

Sample ID: 1310G23-001AMS	SampType: MS	Batch ID: 182884	Units: ug/L	Prep Date: 10/25/2013	RunNo: 254599						
Client ID:	TestCode: PRIORITY POLLUTANT-VOLATILES	E624	Analysis Date: 10/25/2013	SeqNo: 5346527							
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	52.28	0	50	0	105	66.2	120	0	0		
Surr: Dibromofluoromethane	49.81	0	50	0	99.6	79.5	121	0	0		
Surr: Toluene-d8	53.51	0	50	0	107	77	117	0	0		

Sample ID: 1310G23-001AMSD	SampType: MSD	Batch ID: 182884	Units: ug/L	Prep Date: 10/26/2013	RunNo: 254599						
Client ID:	TestCode: PRIORITY POLLUTANT-VOLATILES	E624	Analysis Date: 10/25/2013	SeqNo: 5346529							
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1,1-Trichloroethane	21.05	5.0	20	0	105	52	162	19.07	9.87	23	
1,1,2,2-Tetrachloroethane	19.53	5.0	20	0	97.6	46	157	18.56	5.09	37	
1,1,2-Trichloroethane	22.27	5.0	20	0	111	52	150	19.96	10.9	27.5	
1,1-Dichloroethane	20.57	5.0	20	0	103	59	155	18.7	9.52	25.5	
1,1-Dichloroethene	20.15	5.0	20	0	101	1	234	18.64	7.79	45.5	
1,2-Dichlorobenzene	18.51	5.0	20	0	92.6	18	190	17.53	5.44	35.5	
1,2-Dichloroethane	22.25	5.0	20	0	111	49	155	19.76	11.9	30	
1,2-Dichloropropane	22.72	5.0	20	0	114	1	210	20.9	8.34	69	
1,3-Dichlorobenzene	18.49	5.0	20	0	92.5	59	156	17.92	3.13	27.5	
1,4-Dichlorobenzene	18.23	5.0	20	0	91.2	18	190	16.91	7.51	35.5	
2-Chloroethyl vinyl ether	45.44	5.0	20	0	227	1	305	41.8	8.34	130	
Benzene	21.33	5.0	20	0	107	37	151	19.47	9.12	34.5	
Bromodichloromethane	21.95	5.0	20	0	110	35	155	19.99	9.35	32	
Bromoform	19.84	5.0	20	0	99.2	45	169	19.28	2.86	27	
Bromomethane	19.29	5.0	20	0	96.5	1	242	17.34	10.6	89.5	
Carbon tetrachloride	22.21	5.0	20	0	111	70	140	20.01	10.4	26	
Chlorobenzene	19.85	5.0	20	0	99.2	34	160	18.52	6.93	31.5	
Chloroethane	18.01	10	20	0	90	14	230	16.19	10.6	57	
Chloroform	20.73	5.0	20	0	104	51	138	18.23	12.8	30.5	
Chloromethane	17.02	10	20	0	85.1	1	273	15.19	11.4	99	

Qualifiers:	<	Less than Result value	>	Greater than Result value	B	Analyte detected in the associated Method Blank
	BRL	Below Reporting Limit	E	Estimated value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
	Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

CLIENT: Davis & Brown
 Work Order: 1310174
 Project: 211585

ANALYTICAL QC SUMMARY REPORT

TestCode: PRIORITY POLLUTANT-VOLATILES E624

Sample ID: 1310G23-001AMSD	SampType: MSD	Batch ID: 182884	Units: ug/L	Prep Date: 10/25/2013	RunNo: 254599						
Client ID:	TestCode: PRIORITY POLLUTANT-VOLATILES	E624	Analysis Date: 10/25/2013	SeqNo: 5346529							
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
cis-1,3-Dichloropropene	19.67	5.0	20	0	98.4	1	227	17.78	10.1	79	
Dibromochloromethane	20.39	5.0	20	0	102	53	149	18.87	7.74	30.5	
Ethylbenzene	20.91	5.0	20	0	105	37	162	18.95	9.83	37.5	
Methylene chloride	17.47	5.0	20	0	87.4	1	221	15.64	11.1	37	
Tetrachloroethene	19.48	5.0	20	0	97.4	64	148	18.29	6.30	25	
Toluene	21.94	5.0	20	0	110	47	150	19.88	9.85	24	
trans-1,2-Dichloroethene	20.66	5.0	20	0	103	54	156	18.25	12.4	28.5	
trans-1,3-Dichloropropene	22.18	5.0	20	0	111	17	183	19.94	10.6	52	
Trichloroethene	19.09	5.0	20	0	95.4	71	157	17.62	8.01	33	
Trichlorofluoromethane	22.11	5.0	20	0	111	17	181	20.09	9.57	50	
Vinyl chloride	20.42	2.0	20	0	102	1	251	17.95	12.9	100	
Surr: 4-Bromofluorobenzene	52.25	0	50	0	104	66.2	120	52.28	0	0	
Surr: Dibromofluoromethane	50.91	0	50	0	102	79.5	121	49.81	0	0	
Surr: Toluene-d8	53.49	0	50	0	107	77	117	53.51	0	0	

Qualifiers:	<	Less than Result value	>	Greater than Result value	B	Analyte detected in the associated Method Blank
	BRL	Below Reporting Limit	E	Estimated value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
	Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

CLIENT: Davis & Brown
 Work Order: 1310174
 Project: 211585

ANALYTICAL QC SUMMARY REPORT

TestCode: PRIORITY POLLUTANT-SEMIVOLATILE ORGANICS

Sample ID: MB-182861	SampType: MBLK	Batch ID: 182861	Units: ug/L	Prep Date: 10/24/2013	RunNo: 254648						
Client ID:	TestCode: PRIORITY POLLUTANT-SEMIVOLATILE ORGANICS E625	Analysis Date: 10/24/2013	SeqNo: 5347031								
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
2,4,6-Trichlorophenol	BRL	10	0	0	0	0	0	0	0		
2,4-Dichlorophenol	BRL	10	0	0	0	0	0	0	0		
2,4-Dimethylphenol	BRL	10	0	0	0	0	0	0	0		
2,4-Dinitrophenol	BRL	50	0	0	0	0	0	0	0		
2,4-Dinitrotoluene	BRL	10	0	0	0	0	0	0	0		
2,6-Dinitrotoluene	BRL	10	0	0	0	0	0	0	0		
2-Chloronaphthalene	BRL	10	0	0	0	0	0	0	0		
2-Chlorophenol	BRL	10	0	0	0	0	0	0	0		
2-Nitrophenol	BRL	10	0	0	0	0	0	0	0		
3,3'-Dichlorobenzidine	BRL	10	0	0	0	0	0	0	0		
4,6-Dinitro-2-methylphenol	BRL	10	0	0	0	0	0	0	0		
4-Bromophenyl phenyl ether	BRL	10	0	0	0	0	0	0	0		
4-Chloro-3-methylphenol	BRL	10	0	0	0	0	0	0	0		
4-Chlorophenyl phenyl ether	BRL	10	0	0	0	0	0	0	0		
4-Nitrophenol	BRL	10	0	0	0	0	0	0	0		
Acenaphthene	BRL	10	0	0	0	0	0	0	0		
Acenaphthylene	BRL	10	0	0	0	0	0	0	0		
Anthracene	BRL	10	0	0	0	0	0	0	0		
Benz(a)anthracene	BRL	10	0	0	0	0	0	0	0		
Benzidine	BRL	100	0	0	0	0	0	0	0		
Benzo(a)pyrene	BRL	10	0	0	0	0	0	0	0		
Benzo(b)fluoranthene	BRL	10	0	0	0	0	0	0	0		
Benzo(g,h,i)perylene	BRL	10	0	0	0	0	0	0	0		
Benzo(k)fluoranthene	BRL	10	0	0	0	0	0	0	0		
Bis(2-chloroethoxy)methane	BRL	10	0	0	0	0	0	0	0		
Bis(2-chloroethyl)ether	BRL	10	0	0	0	0	0	0	0		
Bis(2-chloroisopropyl)ether	BRL	10	0	0	0	0	0	0	0		
Bis(2-ethylhexyl)phthalate	BRL	10	0	0	0	0	0	0	0		

Qualifiers:	<	Less than Result value	>	Greater than Result value	B	Analyte detected in the associated Method Blank
	BRL	Below Reporting Limit	E	Estimated value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
	Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

CLIENT: Davis & Brown
 Work Order: 1310174
 Project: 211585

ANALYTICAL QC SUMMARY REPORT

TestCode: PRIORITY POLLUTANT-SEMIVOLATILE ORGANICS

Sample ID: MB-182861	SampType: MBLK	Batch ID: 182861	Units: ug/L	Prep Date: 10/24/2013	RunNo: 254648						
Client ID:	TestCode: PRIORITY POLLUTANT-SEMIVOLATILE ORGANICS E625			Analysis Date: 10/24/2013	SeqNo: 5347031						
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Butyl benzyl phthalate	BRL	10	0	0	0	0	0	0	0		
Chrysene	BRL	10	0	0	0	0	0	0	0		
Dibenz(a,h)anthracene	BRL	10	0	0	0	0	0	0	0		
Diethyl phthalate	BRL	10	0	0	0	0	0	0	0		
Dimethyl phthalate	BRL	10	0	0	0	0	0	0	0		
Di-n-butyl phthalate	BRL	10	0	0	0	0	0	0	0		
Di-n-octyl phthalate	BRL	10	0	0	0	0	0	0	0		
Fluoranthene	BRL	10	0	0	0	0	0	0	0		
Fluorene	BRL	10	0	0	0	0	0	0	0		
Hexachlorobenzene	BRL	10	0	0	0	0	0	0	0		
Hexachlorobutadiene	BRL	10	0	0	0	0	0	0	0		
Hexachlorocyclopentadiene	BRL	10	0	0	0	0	0	0	0		
Hexachloroethane	BRL	10	0	0	0	0	0	0	0		
Indeno(1,2,3-cd)pyrene	BRL	10	0	0	0	0	0	0	0		
Isophorone	BRL	10	0	0	0	0	0	0	0		
Naphthalene	BRL	10	0	0	0	0	0	0	0		
Nitrobenzene	BRL	10	0	0	0	0	0	0	0		
N-Nitrosodimethylamine	BRL	10	0	0	0	0	0	0	0		
N-Nitrosodi-n-propylamine	BRL	10	0	0	0	0	0	0	0		
N-Nitrosodiphenylamine	BRL	10	0	0	0	0	0	0	0		
Pentachlorophenol	BRL	10	0	0	0	0	0	0	0		
Phenanthrene	BRL	10	0	0	0	0	0	0	0		
Phenol	BRL	10	0	0	0	0	0	0	0		
Pyrene	BRL	10	0	0	0	0	0	0	0		
Surr: 2,4,6-Tribromophenol	43.31	0	50	0	86.6	50.9	150	0	0		
Surr: 2-Fluorobiphenyl	17.19	0	25	0	68.8	50.7	121	0	0		
Surr: 2-Fluorophenol	25.34	0	50	0	50.7	25.8	120	0	0		
Surr: 4-Terphenyl-d14	19.02	0	25	0	76.1	44	147	0	0		

Qualifiers:	<	Less than Result value	>	Greater than Result value	B	Analyte detected in the associated Method Blank
	BRL	Below Reporting Limit	E	Estimated value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
	Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

CLIENT: Davis & Brown
 Work Order: 1310174
 Project: 211585

ANALYTICAL QC SUMMARY REPORT

TestCode: PRIORITY POLLUTANT-SEMIVOLATILE ORGANICS

Sample ID: MB-182861	SampType: MBLK	Batch ID: 182861	Units: ug/L	Prep Date: 10/24/2013	RunNo: 254648						
Client ID:	TestCode: PRIORITY POLLUTANT-SEMIVOLATILE ORGANICS E625	Analysis Date: 10/24/2013	SeqNo: 5347031								
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: Nitrobenzene-d5	15.76	0	25	0	63	41.6	120	0	0		
Surr: phenol-d5	17.07	0	50	0	34.1	13	120	0	0		

Sample ID: LCS-182861	SampType: LCS	Batch ID: 182861	Units: ug/L	Prep Date: 10/24/2013	RunNo: 254648						
Client ID:	TestCode: PRIORITY POLLUTANT-SEMIVOLATILE ORGANICS E625	Analysis Date: 10/24/2013	SeqNo: 5347033								
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
2,4,6-Trichlorophenol	49.7	10	50	0	99.4	52.4	129.2	0	0		
2,4-Dichlorophenol	47.2	10	50	0	94.4	52.5	121.7	0	0		
2,4-Dimethylphenol	45.18	10	50	0	90.4	41.8	109	0	0		
2,4-Dinitrophenol	BRL	50	50	0	99.7	1	172.9	0	0		
2,4-Dinitrotoluene	52.18	10	50	0	104	47.5	126.9	0	0		
2,6-Dinitrotoluene	49.77	10	50	0	99.5	68.1	136.7	0	0		
2-Chloronaphthalene	37.46	10	50	0	74.9	64.5	113.5	0	0		
2-Chlorophenol	42.74	10	50	0	85.5	36.2	120.4	0	0		
2-Nitrophenol	46.79	10	50	0	93.6	45	166.7	0	0		
3,3'-Dichlorobenzidine	48.48	10	50	0	97	8.2	212.5	0	0		
4,6-Dinitro-2-methylphenol	48.61	10	50	0	97.2	53	100	0	0		
4-Bromophenyl phenyl ether	51.15	10	50	0	102	64.9	114.4	0	0		
4-Chloro-3-methylphenol	47.72	10	50	0	95.4	40.8	127.9	0	0		
4-Chlorophenyl phenyl ether	49.79	10	50	0	99.6	38.4	144.7	0	0		
4-Nitrophenol	25.62	10	50	0	51.2	13	106.5	0	0		
Acenaphthene	45.15	10	50	0	90.3	60.1	132.3	0	0		
Acenaphthylene	44.88	10	50	0	89.8	53.5	126	0	0		
Anthracene	47.03	10	50	0	94.1	43.4	118	0	0		
Benz(a)anthracene	53.27	10	50	0	107	41.8	133	0	0		
Benzo(a)pyrene	47.48	10	50	0	95	31.7	148	0	0		
Benzo(b)fluoranthene	46.04	10	50	0	92.1	42	140.4	0	0		

Qualifiers:	<	Less than Result value	>	Greater than Result value	B	Analyte detected in the associated Method Blank
	BRL	Below Reporting Limit	E	Estimated value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
	Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

CLIENT: Davis & Brown
 Work Order: 1310174
 Project: 211585

ANALYTICAL QC SUMMARY REPORT

TestCode: PRIORITY POLLUTANT-SEMIVOLATILE ORGANICS

Sample ID: LCS-182861	SampType: LCS	Batch ID: 182861	Units: ug/L	Prep Date: 10/24/2013	RunNo: 254648						
Client ID:	TestCode: PRIORITY POLLUTANT-SEMIVOLATILE ORGANICS E625	Analysis Date: 10/24/2013	SeqNo: 5347033								
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzo(g,h,i)perylene	51.1	10	50	0	102	1	195	0	0		
Benzo(k)fluoranthene	52.3	10	50	0	105	25.2	145.7	0	0		
Bis(2-chloroethoxy)methane	43.78	10	50	0	87.6	49.2	164.7	0	0		
Bis(2-chloroethyl)ether	39.76	10	50	0	79.5	42.9	126	0	0		
Bis(2-chloroisopropyl)ether	44.02	10	50	0	88	62.8	138.6	0	0		
Bis(2-ethylhexyl)phthalate	49.8	10	50	0	99.6	28.9	136.8	0	0		
Butyl benzyl phthalate	47.96	10	50	0	95.9	1	139.9	0	0		
Chrysene	47.61	10	50	0	95.2	44.1	139.9	0	0		
Dibenz(a,h)anthracene	49.9	10	50	0	99.8	1	199.7	0	0		
Diethyl phthalate	49.73	10	50	0	99.5	1	100	0	0		
Dimethyl phthalate	50.13	10	50	0	100	1	100	0	0		S
Di-n-butyl phthalate	50.5	10	50	0	101	8.4	111	0	0		
Di-n-octyl phthalate	48.22	10	50	0	96.4	18.6	131.8	0	0		
Fluoranthene	50.28	10	50	0	101	42.9	121.3	0	0		
Fluorene	47.22	10	50	0	94.4	71.6	108.4	0	0		
Hexachlorobenzene	53.56	10	50	0	107	7.8	141.5	0	0		
Hexachlorobutadiene	36.58	10	50	0	73.2	37.8	102.2	0	0		
Hexachlorocyclopentadiene	67.45	10	50	0	135	50.4	165	0	0		
Hexachloroethane	32.24	10	50	0	64.6	55.2	100	0	0		
Indeno(1,2,3-cd)pyrene	47.98	10	50	0	96	1	150.9	0	0		
Isophorone	43.66	10	50	0	87.3	46.6	180.2	0	0		
Naphthalene	38.12	10	50	0	76.2	35.6	119.6	0	0		
Nitrobenzene	43.82	10	50	0	87.8	54.3	157.8	0	0		
N-Nitrosodimethylamine	26.46	10	50	0	52.9	30.1	120	0	0		
N-Nitrosodi-n-propylamine	46.93	10	50	0	93.9	13.6	197.9	0	0		
N-Nitrosodiphenylamine	22.26	10	50	0	44.5	31.3	120	0	0		
Pentachlorophenol	55.92	10	50	0	112	38.1	151.8	0	0		
Phenanthrene	46.72	10	50	0	93.4	65.2	108.7	0	0		

Qualifiers:	<	Less than Result value	>	Greater than Result value	B	Analyte detected in the associated Method Blank
	BRL	Below Reporting Limit	E	Estimated value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
	Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

CLIENT: Davis & Brown
 Work Order: 1310174
 Project: 211585

ANALYTICAL QC SUMMARY REPORT

TestCode: PRIORITY POLLUTANT-SEMIVOLATILE ORGANICS

Sample ID: LCS-182861	SampType: LCS	Batch ID: 182861	Units: ug/L	Prep Date: 10/24/2013	RunNo: 254648						
Client ID:	TestCode: PRIORITY POLLUTANT-SEMIVOLATILE ORGANICS E625	Analysis Date: 10/24/2013	SeqNo: 5347033								
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phenol	22.42	10	50	0	44.8	16.6	100	0	0		
Pyrene	47.12	10	50	0	94.2	69.6	100	0	0		
Surr: 2,4,6-Tribromophenol	61.04	0	50	0	122	50.9	150	0	0		
Surr: 2-Fluorobiphenyl	24.6	0	25	0	98.4	50.7	121	0	0		
Surr: 2-Fluorophenol	31.26	0	50	0	62.5	25.6	120	0	0		
Surr: 4-Terphenyl-d14	26.71	0	25	0	107	44	147	0	0		
Surr: Nitrobenzene-d5	22.22	0	25	0	88.9	41.8	120	0	0		
Surr: phenol-d5	22.87	0	50	0	45.7	13	120	0	0		

Sample ID: LCS-182861	SampType: LCS	Batch ID: 182861	Units: ug/L	Prep Date: 10/24/2013	RunNo: 254536						
Client ID:	TestCode: PRIORITY POLLUTANT-SEMIVOLATILE ORGANICS E625	Analysis Date: 10/24/2013	SeqNo: 5347059								
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzidine	BRL	100	100	0	73.2	1	120	0	0		

Sample ID: 1310J60-006AMS	SampType: MS	Batch ID: 182861	Units: ug/L	Prep Date: 10/25/2013	RunNo: 254653						
Client ID:	TestCode: PRIORITY POLLUTANT-SEMIVOLATILE ORGANICS E625	Analysis Date: 10/25/2013	SeqNo: 5347100								
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
2,4,6-Trichlorophenol	83.26	20	100	0	83.3	37	144	0	0		
2,4-Dichlorophenol	78.9	20	100	0	78.9	39	135	0	0		
2,4-Dimethylphenol	79.01	20	100	0	79	32	119	0	0		
2,4-Dinitrophenol	BRL	100	100	0	80.4	1	191	0	0		
2,4-Dinitrotoluene	90.8	20	100	0	90.8	39	139	0	0		
2,6-Dinitrotoluene	86.28	20	100	0	86.3	50	158	0	0		
2-Chloronaphthalene	73.22	20	100	0	73.2	60	118	0	0		
2-Chlorophenol	73.71	20	100	0	73.7	23	134	0	0		
2-Nitrophenol	79.57	20	100	0	79.6	29	182	0	0		

Qualifiers:	<	Less than Result value	>	Greater than Result value	B	Analyte detected in the associated Method Blank
	BRL	Below Reporting Limit	E	Estimated value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
	Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

CLIENT: Davis & Brown
 Work Order: 1310174
 Project: 211585

ANALYTICAL QC SUMMARY REPORT

TestCode: PRIORITY POLLUTANT-SEMIVOLATILE ORGANICS

Sample ID: 1310J60-006AMS	SampType: MS	Batch ID: 182861	Units: ug/L	Prep Date: 10/25/2013	RunNo: 254653						
Client ID:	TestCode: PRIORITY POLLUTANT-SEMIVOLATILE ORGANICS E625	Analysis Date: 10/25/2013	SeqNo: 5347100								
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
3,3'-Dichlorobenzidine	BRL	20	100	0	16.8	1	262	0	0		
4,6-Dinitro-2-methylphenol	88.16	20	100	0	88.2	1	181	0	0		
4-Bromophenyl phenyl ether	83.58	20	100	0	83.6	53	127	0	0		
4-Chloro-3-methylphenol	82.25	20	100	0	82.2	22	147	0	0		
4-Chlorophenyl phenyl ether	84.6	20	100	0	84.6	25	158	0	0		
4-Nitrophenol	57.74	20	100	0	57.7	1	132	0	0		
Acenaphthene	81.24	20	100	0	81.2	47	145	0	0		
Acenaphthylene	80.95	20	100	0	81	33	145	0	0		
Anthracene	80.58	20	100	0	80.6	27	133	0	0		
Benz(a)anthracene	91.22	20	100	0	91.2	33	143	0	0		
Benzidine	BRL	200	200	0	0	1	120	0	0		S
Benzo(a)pyrene	95.94	20	100	0	95.9	17	163	0	0		
Benzo(b)fluoranthene	94.87	20	100	0	94.9	24	159	0	0		
Benzo(g,h,i)perylene	98.85	20	100	0	98.8	1	219	0	0		
Benzo(k)fluoranthene	104.8	20	100	0	105	11	162	0	0		
Bis(2-chloroethoxy)methane	79.02	20	100	0	79	33	184	0	0		
Bis(2-chloroethyl)ether	75.01	20	100	0	75	12	158	0	0		
Bis(2-chloroisopropyl)ether	102.8	20	100	0	103	36	166	0	0		
Bis(2-ethylhexyl)phthalate	82.89	20	100	0	82.9	8	158	0	0		
Butyl benzyl phthalate	85.13	20	100	0	85.1	1	152	0	0		
Chrysene	77.83	20	100	0	77.8	17	168	0	0		
Dibenz(a,h)anthracene	100.9	20	100	0	101	1	227	0	0		
Diethyl phthalate	88.45	20	100	0	88.4	1	114	0	0		
Dimethyl phthalate	86.94	20	100	0	86.9	1	112	0	0		
Di-n-butyl phthalate	92.07	20	100	0	92.1	1	118	0	0		
Di-n-octyl phthalate	85.88	20	100	0	85.9	4	146	0	0		
Fluoranthene	89.52	20	100	0	89.5	26	137	0	0		
Fluorene	84.43	20	100	0	84.4	59	121	0	0		

Qualifiers:	<	Less than Result value	>	Greater than Result value	B	Analyte detected in the associated Method Blank
	BRL	Below Reporting Limit	E	Estimated value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
	Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

CLIENT: Davis & Brown
 Work Order: 1310174
 Project: 211585

ANALYTICAL QC SUMMARY REPORT

TestCode: PRIORITY POLLUTANT-SEMIVOLATILE ORGANICS

Sample ID: 1310J60-006AMS	SampType: MS	Batch ID: 182861	Units: ug/L	Prep Date: 10/25/2013	RunNo: 254653						
Client ID:	TestCode: PRIORITY POLLUTANT-SEMIVOLATILE ORGANICS E625	Analysis Date: 10/25/2013	SeqNo: 5347100								
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexachlorobenzene	81.48	20	100	0	81.5	1	152	0	0		
Hexachlorobutadiene	73.32	20	100	0	73.3	24	116	0	0		
Hexachlorocyclopentadiene	126.4	20	100	0	126	1	139	0	0		
Hexachloroethane	69.34	20	100	0	69.3	40	113	0	0		
Indeno(1,2,3-cd)pyrene	101.4	20	100	0	101	1	171	0	0		
Isophorone	80.56	20	100	0	80.6	21	196	0	0		
Naphthalene	71.06	20	100	0	71.1	21	133	0	0		
Nitrobenzene	77.35	20	100	0	77.4	35	180	0	0		
N-Nitrosodimethylamine	64.01	20	100	0	64	20.3	120	0	0		
N-Nitrosodi-n-propylamine	77.3	20	100	0	77.3	1	230	0	0		
N-Nitrosodiphenylamine	38.46	20	100	0	38.5	17.5	120	0	0		
Pentachlorophenol	76.39	20	100	0	76.4	14	176	0	0		
Phenanthrene	83.13	20	100	0	83.1	54	120	0	0		
Phenol	55.36	20	100	0	55.4	5	112	0	0		
Pyrene	79.56	20	100	0	79.6	52	115	0	0		
Surr: 2,4,6-Tribromophenol	81.45	0	100	0	81.4	50.9	150	0	0		
Surr: 2-Fluorobiphenyl	42.91	0	50	0	85.8	50.7	121	0	0		
Surr: 2-Fluorophenol	63.93	0	100	0	63.9	25.6	120	0	0		
Surr: 4-Terphenyl-d14	42.11	0	50	0	84.2	44	147	0	0		
Surr: Nitrobenzene-d5	42.45	0	50	0	84.9	41.6	120	0	0		
Surr: phenol-d5	51.97	0	100	0	52	13	120	0	0		

Sample ID: 1310J60-006AMSD	SampType: MSD	Batch ID: 182861	Units: ug/L	Prep Date: 10/25/2013	RunNo: 254653						
Client ID:	TestCode: PRIORITY POLLUTANT-SEMIVOLATILE ORGANICS E625	Analysis Date: 10/25/2013	SeqNo: 5347102								
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
2,4,6-Trichlorophenol	87.85	20	100	0	87.8	37	144	83.28	5.36	31.7	
2,4-Dichlorophenol	78.48	20	100	0	78.5	39	135	78.9	0.534	26.4	

Qualifiers:	<	Less than Result value	>	Greater than Result value	B	Analyte detected in the associated Method Blank
	BRL	Below Reporting Limit	E	Estimated value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
	Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

CLIENT: Davis & Brown
 Work Order: 1310174
 Project: 211585

ANALYTICAL QC SUMMARY REPORT

TestCode: PRIORITY POLLUTANT-SEMIVOLATILE ORGANICS

Sample ID: 1310J60-006AMSD	SampType: MSD	Batch ID: 182861	Units: ug/L	Prep Date: 10/25/2013	RunNo: 254653						
Client ID:	TestCode: PRIORITY POLLUTANT-SEMIVOLATILE ORGANICS E625	Analysis Date: 10/25/2013	SeqNo: 5347102								
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
2,4-Dimethylphenol	77.91	20	100	0	77.9	32	119	79.01	1.40	26.1	
2,4-Dinitrophenol	BRL	100	100	0	82.8	1	191	80.45	0	49.8	
2,4-Dinitrotoluene	94.87	20	100	0	94.9	39	139	90.8	4.38	21.8	
2,6-Dinitrotoluene	87.93	20	100	0	87.9	50	158	86.28	1.89	29.6	
2-Chloronaphthalene	73.37	20	100	0	73.4	60	118	73.22	0.205	13	
2-Chlorophenol	73.89	20	100	0	73.9	23	134	73.71	0.244	28.7	
2-Nitrophenol	79.24	20	100	0	79.2	29	182	79.57	0.416	35.2	
3,3'-Dichlorobenzidine	BRL	20	100	0	18.2	1	262	16.84	0	71.4	
4,6-Dinitro-2-methylphenol	90.17	20	100	0	90.2	1	181	88.16	2.25	93.2	
4-Bromophenyl phenyl ether	82.93	20	100	0	82.9	53	127	83.56	0.757	23	
4-Chloro-3-methylphenol	83.22	20	100	0	83.2	22	147	82.25	1.17	37.2	
4-Chlorophenyl phenyl ether	84.88	20	100	0	84.9	25	158	84.6	0.330	33.4	
4-Nitrophenol	62.1	20	100	0	62.1	1	132	57.74	7.28	47.2	
Acenaphthene	82.57	20	100	0	82.6	47	145	81.24	1.62	27.6	
Acenaphthylene	80.44	20	100	0	80.4	33	145	80.95	0.632	40.2	
Anthracene	78.77	20	100	0	79.8	27	133	80.58	1.01	32	
Benz(a)anthracene	90.97	20	100	0	91	33	143	91.22	0.274	27.6	
Benzidine	BRL	200	200	0	0	1	120	0	0	100	S
Benzo(a)pyrene	98.63	20	100	0	98.6	17	163	95.94	2.77	39	
Benzo(b)fluoranthene	97.68	20	100	0	97.7	24	159	94.87	2.92	38.8	
Benzo(g,h,i)perylene	102.2	20	100	0	102	1	219	98.85	3.34	58.9	
Benzo(k)fluoranthene	109.8	20	100	0	110	11	162	104.8	4.50	32.3	
Bis(2-chloroethoxy)methane	78.64	20	100	0	78.6	33	184	79.02	0.482	34.5	
Bis(2-chloroethyl)ether	74.15	20	100	0	74.2	12	158	75.01	1.15	55	
Bis(2-chloroisopropyl)ether	101.5	20	100	0	102	36	166	102.8	1.21	46.3	
Bis(2-ethylhexyl)phthalate	84.86	20	100	0	84.9	8	158	82.89	2.35	41.1	
Butyl benzyl phthalate	85.03	20	100	0	85	1	152	85.13	0.118	23.4	
Chrysene	77.47	20	100	0	77.5	17	168	77.83	0.484	48.3	

Qualifiers:	<	Less than Result value	>	Greater than Result value	B	Analyte detected in the associated Method Blank
	BRL	Below Reporting Limit	E	Estimated value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
	Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

CLIENT: Davis & Brown
 Work Order: 1310174
 Project: 211585

ANALYTICAL QC SUMMARY REPORT

TestCode: PRIORITY POLLUTANT-SEMIVOLATILE ORGANICS

Sample ID: 1310J60-006AMSD	SampType: MSD	Batch ID: 182861	Units: ug/L	Prep Date: 10/25/2013	RunNo: 254653						
Client ID:	TestCode: PRIORITY POLLUTANT-SEMIVOLATILE ORGANICS E625	Analysis Date: 10/25/2013	SeqNo: 5347102								
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dibenz(a,h)anthracene	103.5	20	100	0	104	1	227	100.9	2.52	70	
Diethyl phthalate	90.2	20	100	0	90.2	1	114	88.45	1.96	26.5	
Dimethyl phthalate	87.59	20	100	0	87.8	1	112	86.94	0.745	23.2	
Di-n-butyl phthalate	91.29	20	100	0	91.3	1	118	92.07	0.851	16.7	
Di-n-octyl phthalate	86.19	20	100	0	86.2	4	146	85.88	0.360	31.4	
Fluoranthene	89.2	20	100	0	89.2	26	137	89.52	0.358	32.8	
Fluorene	85.52	20	100	0	85.5	59	121	84.43	1.28	20.7	
Hexachlorobenzene	81.26	20	100	0	81.3	1	152	81.48	0.270	24.9	
Hexachlorobutadiene	68.2	20	100	0	68.2	24	116	73.32	7.24	26.3	
Hexachlorocyclopentadiene	129.6	20	100	0	130	1	139	126.4	2.47	44.5	
Hexachloroethane	68.52	20	100	0	68.5	40	113	69.34	1.19	24.5	
Indeno(1,2,3-cd)pyrene	104.9	20	100	0	105	1	171	101.4	3.41	44.6	
Isophorone	79.7	20	100	0	79.7	21	196	80.56	1.07	63.3	
Naphthalene	69.5	20	100	0	69.5	21	133	71.06	2.22	30.1	
Nitrobenzene	78.71	20	100	0	78.7	35	180	77.35	1.74	39.3	
N-Nitrosodimethylamine	71.89	20	100	0	71.9	20.3	120	64.01	11.6	36.7	
N-Nitrosodi-n-propylamine	78.8	20	100	0	78.8	1	230	77.3	1.92	55.4	
N-Nitrosodiphenylamine	38.04	20	100	0	38	17.5	120	38.46	1.10	43.2	
Pentachlorophenol	83.44	20	100	0	83.4	14	176	76.39	8.82	48.9	
Phenanthrene	82.18	20	100	0	82.2	54	120	83.13	1.15	20.6	
Phenol	56.82	20	100	0	56.8	5	112	55.36	2.60	22.6	
Pyrene	79.69	20	100	0	79.7	52	115	79.56	0.163	25.2	
Surr: 2,4,6-Tribromophenol	86.26	0	100	0	86.3	50.9	150	81.45	0	0	
Surr: 2-Fluorobiphenyl	43.63	0	50	0	87.3	50.7	121	42.91	0	0	
Surr: 2-Fluorophenol	65.79	0	100	0	65.8	25.6	120	63.93	0	0	
Surr: 4-Terphenyl-d14	44.01	0	50	0	88	44	147	42.11	0	0	
Surr: Nitrobenzene-d5	42.7	0	50	0	85.4	41.6	120	42.45	0	0	
Surr: phenol-d5	53.91	0	100	0	53.9	13	120	51.97	0	0	

Qualifiers:	<	Less than Result value	>	Greater than Result value	B	Analyte detected in the associated Method Blank
	BRL	Below Reporting Limit	E	Estimated value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
	Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

CLIENT: Davis & Brown
 Work Order: 1310174
 Project: 211585

ANALYTICAL QC SUMMARY REPORT

TestCode: Volatile Organic Compounds by GC/MS SW8260B

Sample ID: MB-182884	SampType: MBLK	Batch ID: 182884	Units: ug/L	Prep Date: 10/25/2013	RunNo: 254599						
Client ID:	TestCode: Volatile Organic Compounds by GC/MS SW8260B			Analysis Date: 10/25/2013	SeqNo: 6346265						
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethene	BRL	5.0	0	0	0	0	0	0	0		
1,2,4-Trichlorobenzene	BRL	2.0	0	0	0	0	0	0	0		
Acrolein	BRL	5.0	0	0	0	0	0	0	0		
Acrylonitrile	BRL	5.0	0	0	0	0	0	0	0		
Benzene	BRL	5.0	0	0	0	0	0	0	0		
Chlorobenzene	BRL	5.0	0	0	0	0	0	0	0		
Dichlorodifluoromethane	BRL	2.0	0	0	0	0	0	0	0		
Toluene	BRL	5.0	0	0	0	0	0	0	0		
Trichloroethene	BRL	5.0	0	0	0	0	0	0	0		
Surr: 4-Bromofluorobenzene	45.42	0	50	0	90.8	70	130	0	0		
Surr: Dibromofluoromethane	48.64	0	50	0	97.3	70	130	0	0		
Surr: Toluene-d8	48.14	0	50	0	96.3	70	130	0	0		

Sample ID: LCS-182884	SampType: LCS	Batch ID: 182884	Units: ug/L	Prep Date: 10/25/2013	RunNo: 254599						
Client ID:	TestCode: Volatile Organic Compounds by GC/MS SW8260B			Analysis Date: 10/25/2013	SeqNo: 6346262						
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethene	20.51	5.0	20	0	103	60	140	0	0		
Benzene	20.49	5.0	20	0	102	70	130	0	0		
Chlorobenzene	19.82	5.0	20	0	98.1	70	130	0	0		
Toluene	20.64	5.0	20	0	103	70	130	0	0		
Trichloroethene	18.84	5.0	20	0	94.2	70	130	0	0		
Surr: 4-Bromofluorobenzene	51.5	0	50	0	103	70	130	0	0		
Surr: Dibromofluoromethane	49.54	0	50	0	99.1	70	130	0	0		
Surr: Toluene-d8	52.3	0	50	0	105	70	130	0	0		

Qualifiers:	<	Less than Result value	>	Greater than Result value	B	Analyte detected in the associated Method Blank
	BRL	Below Reporting Limit	E	Estimated value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
	Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

CLIENT: Davis & Brown
 Work Order: 1310174
 Project: 211585

ANALYTICAL QC SUMMARY REPORT

TestCode: Volatile Organic Compounds by GC/MS SW8260B

Sample ID: 1310G23-001AMS	SampType: MS	Batch ID: 182884	Units: ug/L	Prep Date: 10/25/2013	RunNo: 254599						
Client ID:	TestCode: Volatile Organic Compounds by GC/MS SW8260B	Analysis Date: 10/25/2013	SeqNo: 5346450								
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethene	18.64	5.0	20	0	93.2	60.2	159	0	0		
Benzene	19.47	5.0	20	0	97.4	70.2	138	0	0		
Chlorobenzene	18.52	5.0	20	0	92.6	70.1	133	0	0		
Toluene	19.88	5.0	20	0	99.4	70	139	0	0		
Trichloroethene	17.62	5.0	20	0	88.1	70.1	144	0	0		
Surr: 4-Bromofluorobenzene	52.28	0	50	0	105	66.2	120	0	0		
Surr: Dibromofluoromethane	49.81	0	50	0	99.6	79.5	121	0	0		
Surr: Toluene-d8	53.51	0	50	0	107	77	117	0	0		

Sample ID: 1310G23-001AMSD	SampType: MSD	Batch ID: 182884	Units: ug/L	Prep Date: 10/25/2013	RunNo: 254599						
Client ID:	TestCode: Volatile Organic Compounds by GC/MS SW8260B	Analysis Date: 10/25/2013	SeqNo: 5346452								
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethene	20.15	5.0	20	0	101	60.2	159	18.64	7.79	19.2	
Benzene	21.33	5.0	20	0	107	70.2	138	19.47	9.12	20	
Chlorobenzene	19.85	5.0	20	0	99.2	70.1	133	18.52	6.93	20	
Toluene	21.94	5.0	20	0	110	70	139	19.88	9.85	20	
Trichloroethene	19.09	5.0	20	0	95.4	70.1	144	17.62	8.01	20	
Surr: 4-Bromofluorobenzene	52.25	0	50	0	104	66.2	120	52.28	0	0	
Surr: Dibromofluoromethane	50.91	0	50	0	102	79.5	121	49.81	0	0	
Surr: Toluene-d8	53.49	0	50	0	107	77	117	53.51	0	0	

Qualifiers:	<	Less than Result value	>	Greater than Result value	B	Analyte detected in the associated Method Blank
	BRL	Below Reporting Limit	E	Estimated value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
	Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

CLIENT: Davis & Brown
 Work Order: 1310174
 Project: 211585

ANALYTICAL QC SUMMARY REPORT

TestCode: TCL-SEMIVOLATILE ORGANICS SW8270D

Sample ID: MB-182861	SampType: MBLK	Batch ID: 182861	Units: ug/L	Prep Date: 10/24/2013	RunNo: 254649						
Client ID:	TestCode: TCL-SEMIVOLATILE ORGANICS	SW8270D		Analysis Date: 10/24/2013	SeqNo: 5347044						
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2-Diphenylhydrazine	BRL	10	0	0	0	0	0	0	0		
Surr: 2,4,6-Tribromophenol	43.31	0	50	0	86.8	50.9	150	0	0		
Surr: 2-Fluorobiphenyl	17.19	0	25	0	68.8	50.7	121	0	0		
Surr: 2-Fluorophenol	25.34	0	50	0	50.7	25.6	120	0	0		
Surr: 4-Terphenyl-d14	19.02	0	25	0	76.1	44	147	0	0		
Surr: Nitrobenzene-d5	15.76	0	25	0	63	41.6	120	0	0		
Surr: Phenol-d5	17.07	0	50	0	34.1	13	120	0	0		

Sample ID: LCS-182861	SampType: LCS	Batch ID: 182861	Units: ug/L	Prep Date: 10/24/2013	RunNo: 254649						
Client ID:	TestCode: TCL-SEMIVOLATILE ORGANICS	SW8270D		Analysis Date: 10/24/2013	SeqNo: 5347046						
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2-Diphenylhydrazine	47.76	10	50	0	95.5	70	130	0	0		
Surr: 2,4,6-Tribromophenol	61.04	0	50	0	122	50.9	150	0	0		
Surr: 2-Fluorobiphenyl	24.6	0	25	0	98.4	50.7	121	0	0		
Surr: 2-Fluorophenol	31.26	0	50	0	62.5	25.6	120	0	0		
Surr: 4-Terphenyl-d14	26.71	0	25	0	107	44	147	0	0		
Surr: Nitrobenzene-d5	22.22	0	25	0	88.9	41.6	120	0	0		
Surr: Phenol-d5	22.87	0	50	0	45.7	13	120	0	0		

Sample ID: 1310J60-006AMS	SampType: MS	Batch ID: 182861	Units: ug/L	Prep Date: 10/25/2013	RunNo: 254656						
Client ID:	TestCode: TCL-SEMIVOLATILE ORGANICS	SW8270D		Analysis Date: 10/25/2013	SeqNo: 5347130						
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2-Diphenylhydrazine	86.7	20	100	0	86.7	50	150	0	0		
Surr: 2,4,6-Tribromophenol	81.45	0	100	0	81.4	50.9	150	0	0		
Surr: 2-Fluorobiphenyl	42.91	0	50	0	85.8	50.7	121	0	0		
Surr: 2-Fluorophenol	63.93	0	100	0	63.9	25.6	120	0	0		

Qualifiers:	<	Less than Result value	>	Greater than Result value	B	Analyte detected in the associated Method Blank
	BRL	Below Reporting Limit	E	Estimated value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
	Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

CLIENT: Davis & Brown
 Work Order: 1310174
 Project: 211585

ANALYTICAL QC SUMMARY REPORT

TestCode: TCL-SEMIVOLATILE ORGANICS SW8270D

Sample ID: 1310J60-006AMS	SampType: MS	Batch ID: 182861	Units: ug/L	Prep Date: 10/25/2013	RunNo: 254656						
Client ID:	TestCode: TCL-SEMIVOLATILE ORGANICS	SW8270D		Analysis Date: 10/25/2013	SeqNo: 5347130						
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Surr: 4-Terphenyl-d14	42.11	0	50	0	84.2	44	147	0	0		
Surr: Nitrobenzene-d5	42.45	0	50	0	84.9	41.6	120	0	0		
Surr: Phenol-d5	51.97	0	100	0	52	13	120	0	0		

Sample ID: 1310J60-006AMSD	SampType: MSD	Batch ID: 182861	Units: ug/L	Prep Date: 10/25/2013	RunNo: 254656						
Client ID:	TestCode: TCL-SEMIVOLATILE ORGANICS	SW8270D		Analysis Date: 10/25/2013	SeqNo: 5347132						
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

1,2-Diphenylhydrazine	84.75	20	100	0	84.8	50	150	88.7	2.27	30	
Surr: 2,4,6-Tribromophenol	86.26	0	100	0	86.3	50.9	150	81.45	0	0	
Surr: 2-Fluorobiphenyl	43.63	0	50	0	87.3	50.7	121	42.91	0	0	
Surr: 2-Fluorophenol	65.79	0	100	0	65.8	25.6	120	63.93	0	0	
Surr: 4-Terphenyl-d14	44.01	0	50	0	88	44	147	42.11	0	0	
Surr: Nitrobenzene-d5	42.7	0	50	0	85.4	41.6	120	42.45	0	0	
Surr: Phenol-d5	53.91	0	100	0	53.9	13	120	51.97	0	0	

Qualifiers:	<	Less than Result value	>	Greater than Result value	B	Analyte detected in the associated Method Blank
	BRL	Below Reporting Limit	E	Estimated value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
	Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

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Data Qualifiers

Within the attached report, some analytical data may be reported as **Qualified Data** as indicated by a data qualifier or a flag next to the result. This table summarizes the possible **Data Qualifiers** that may be associated with this report.

A	BOD result showed toxic tendencies.
B	The BOD data is suspect due to a failed quality control check (GGA).
C	The BOD data is suspect due to a failed quality control check (Blanks).
D	Results are reported on a dry weight basis.
H	Sample was analyzed beyond the accepted holding time
J	Estimated value. Presence of the compound was confirmed but less than the reported detection limit.
L	Results based on colony counts outside the acceptable range. The ideal range for the fecal coliform test is 20 - 60 colonies.
MS	Sample matrix spike percent recovery was outside the accepted range.
O	Sampled, but analysis lost or not performed
P	Sample was not properly preserved upon receipt.
G	LCS or MS exceeds the control limits.
S	Sample was analyzed by another SC certified Lab.
SC	Seed Correction outside the accepted range of 0.60-1.0 mg/L.
SD	Results reported are derived from suspect data.
SS	BOD results derived from supersaturated D.O. values. Sample(s) were aerated per the supersaturation procedure in Standard Methods 5210B
SDF	Sample Dilutions did not meet the requirement of DO depletion of at least 2.0 mg/L or the sample dilutions did not meet the requirement of DO residual of at least 1.0 mg/L.
V	Analyte detected in the associated method blank. Note: the value in the blank shall not be subtracted from the sample result.

**DAVIS & BROWN**

ENGINEERING • ENVIRONMENTAL • O&M SERVICES

www.NACCDB.com

(843)665-6746

November 12, 2013

Re: Flagged & No Data BOD/CBOD Results for Oct-Nov 2013**D&B Clients:**

This letter is in response to flagged and missing BOD/CBOD data for the month of October and November of 2013. Davis & Brown has purchased BOD/CBOD seed from North Central Laboratories (NCL) in Wisconsin for several years without any incidents. The seed product has been stable and reliable. However, on October 16, 2013 a new bottle of seed from NCL was opened and used in the test. This batch of seed, manufactured by Bio Systems International, demonstrated inconsistencies with performance—see attachment. We observed much higher concentrations than previously experienced, causing BOD data to be flagged with “SC”, and no data available for some CBOD samples. This decision to flag and report no data was made after reviews of SOP (Standard Operating Procedure), SM 5210-2011, and consultation with laboratory certification.

We are currently troubleshooting the test, and our company is also currently reviewing and implementing steps to prevent this from occurring again. D&B regrets any complications produced by this event.

Please do not hesitate to contact us with any questions you may have.

Thank You,

Scott Fields

Digitally signed by Scott Fields
DN: cn=Scott Fields, o=Davis & Brown
email=sfields@naccdb.com
Date: 2013.11.12 10:41:05 -0700

Scott Fields
Assistant Laboratory Director
Davis & Brown
sfields@naccdb.com
pH: 843-665-6746 Ext: 531

Enclosed (2): Bio-Systems International Email
D&B Flag Sheet

Scott Fields

From: Dana Juul <djuul@biobugs.com>
Sent: Monday, November 04, 2013 5:15 PM
To: sfields@naccdb.com
Cc: Jan Treadway
Subject: Requested Documentation re: Bio-Systems BODSeed

Good Afternoon Scott,

BIO-SYSTEMS institutes a multi-stage quality control procedure for every lot produced and shipped from our facility. Although lot#56634 did pass all of our quality checks, we listen closely to customer feedback on product performance and more than one user has indicated inconsistencies with this particular batch. Based on these responses we have narrowed the specifications for this product and adjusted production procedures to ensure improved quality moving forward. As a short term solution, we have supplied replacement product as needed from the current batch to allow our customers to fulfill their testing requirements.

Please let us know if there is anything further that we can do to address your concerns or if you have any additional questions.

Dana Juul
Inside Sales / Customer Service Manager
Bio-Systems International
Direct: 608-313-1484
Cell: 608-348-2959
www.biobugs.com



Discarded: <http://www.biobugs.com/AboutUs/AboutUsMain/AboutUsMain/1024/AboutUs.aspx>

DAVIS & BROWN

Data Qualifiers

Within the attached report, some analytical data may be reported as Qualified Data as indicated by a data qualifier or a flag next to the result. This table summarizes the possible Data Qualifiers that may be associated with this report.

A	BOD result showed toxic tendencies.
B	The BOD data is suspect due to a failed quality control check (GGA).
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D	Results are reported on a dry weight basis.
H	Sample was analyzed beyond the accepted holding time
J	Estimated value. Presence of the compound was confirmed but less than the reported detection limit.
L	Results based on colony counts outside the acceptable range. The ideal range for the fecal coliform test is 20 - 60 colonies.
MS	Sample matrix spike percent recovery was outside the accepted range.
O	Sampled, but analysis lost or not performed
P	Sample was not properly preserved upon receipt.
G	LCS or MS exceeds the control limits.
S	Sample was analyzed by another SC certified Lab.
SC	Seed Correction outside the accepted range of 0.60-1.0 mg/L.
SD	Results reported are derived from suspect data.
SS	BOD results derived from supersaturated D.O. values. Sample(s) were aerated per the supersaturation procedure in Standard Methods 5210B
SDF	Sample Dilutions did not meet the requirement of DO depletion of at least 2.0 mg/L or the sample dilutions did not meet the requirement of DO residual of at least 1.0 mg/L.
V	Analyte detected in the associated method blank. Note: the value in the blank shall not be subtracted from the sample result.

DAVIS & BROWN

Data Qualifiers

Within the attached report, some analytical data may be reported as Qualified Data as indicated by Data Qualifier or flag next to the result. **The data qualifier "S" indicates that the analysis was performed by another South Carolina certified lab. This table summarizes the South Carolina Lab Certification Numbers for those laboratories.**

S	South Carolina Lab Certification Number: 23101
S1	South Carolina Lab Certification Number: 93013
S2	South Carolina Lab Certification Number: 23105
S3	South Carolina Lab Certification Number: 10120
S4	South Carolina Lab Certification Number: 84002
S5	South Carolina Lab Certification Number: 32117
S6	Agricultural Service Laboratory Clemson University
S7	South Carolina Lab Certification Number: 36001
S8	Lab samples were subcontracted. See attached documentation.
S9	South Carolina Lab Certification Number: 94014001; 94014002
S10	South Carolina Lab Certification Number: 84009
S11	South Carolina Lab Certification Number: 96026; 96031; 98001; 73006; 98016 Note: S11A indicates AES Laboratory; S11G indicates GCAL Laboratory
S12	AASHTO R18 Certified
S13	South Carolina Lab Certification Number: 96012
S14	South Carolina Lab Certification Number: 89002
S15	*****
S16	South Carolina Lab Certification Number: 84004
S17	South Carolina Lab Certification Number: 96037001
S18	South Carolina Lab Certification Number: 95005
S19	South Carolina Lab Certification Number: 23104
S20	South Carolina Lab Certification Number: 96027001
S21	South Carolina Lab Certification Number: 21005
S22	South Carolina Lab Certification Number: 24110
S23	South Carolina Lab Certification Number: 84001001
S24	South Carolina Lab Certification Number: 82014001
S25	Sample was analyzed by Microseeps, Inc Laboratory
S26	North Carolina Lab Certification Number: 21 (Wilson Division NC00120)
S27	South Carolina Lab Certification Number: 40569
S28	South Carolina Lab Certification Number: 32571

**DAVIS & BROWN**124 W. McIver Road
Florence, SC 29501PH: 843-665-6746
FAX: 843-656-2208PAGE # 95612 OF REGULATORY: ☒ YES ☐ NO**CHAIN OF CUSTODY RECORD**TURNAROUND TIME: P1
STANDARD RUSH P2CLIENT:
HONDA ATV PLANT

ADDRESS:

PHONE:

FAX:

SAMPLE ANALYSIS REQUESTED

Preservative

D

A

D

A

C

B

TYPE: Grab / Composite

TOTAL # OF CONTAINERS

BOD

COD

Cd, Cr, Cu, Ni, Pb, Ag, Zn, A/D

Oil & Grease

Mercury

Cyanide

BTEX

170

PROGRAM AREA

USE CODES TO INDICATE IF SAMPLE WAS
FILTERED OR PRESERVED: A = HNO₃,
B = HCL D = H₂SO₄ F = FILTRATION
C = NaOH E = Na₂S₂O₃ G = ZINCACETATEPROGRAM AREA: D = DRINKING WATER
G = GROUNDWATER S = SOLID SL = SLUDGE
W = WASTEWATER O = OTHER

PLEASE PRINT LEGIBLY

SHADED AREAS FOR LAB USE ONLY

NOTES

LAB ID

SAMPLE ID

DATE

TIME

INITIAL

EFFLUENT(Q)

START:

10-16-13 10:00

FINISH:

10-17-13 10:00

CJ

L

3

1

1

1

Fill in the Number of Containers for EACH Test

W

211584

EFFLUENT(Q)-GRAB

Annual

START:

FINISH:

10-17-13 9:55

CJ

G

6

1

1

1

3

2

W

Inst. Flow- 7.0 GPM

211585

EFFLUENT-pH

START:

FINISH:

10-17-13 9:50

CJ

G

pH- 8.55

START:

FINISH:

Temp- 27.6

SAMPLER SIGNATURE

*Cory Davidson*COMPOSITE TEMP 21 °C() TIME 1 FLOW PROPORTIONALINTERVAL BETWEEN SAMPLES 1 pulseSAMPLE VOLUME 200 ml# OF SAMPLES 50

METER NUMBER

TRC DPD LOT # DO pH 17

FLOW INFO

9515543 - 9003090
9512453ICE
☒ YES ☐ NO ☐ PACKRECEIPT
TEMP 33 °C

Relinquished by

Date

Time

Cory Davidson 10-17-13 15:30

Relinquished by

Date

Time

Relinquished by

Date

Time

Received by

Date

Time

Sharon Hyl 10-17-13 15:50

Received by

Date

Time

Received by

Date

Time

Comments

Davis & Brown

PO Box 15038
Quinby, SC 29506
(843) 665-6746 FAX: (843) 629-1444

Certificate of Analysis

Client: HONDA ATV PLANT - TOM BAILEY
1111 HONDAWAY
TIMMONSVILLE, SC 29161
South Carolina Certification Number: 21117
Contact: TOM BAILEY
Receipt Date: 17-Oct-13
Client #: 982
Report Date: 06-Nov-13

Sample Date: 17-Oct-13
SDG #: SDG-095618
Lab Sample ID: LSID-211600
Sample ID: EFFLUENT(G)-FILTERED

Approved By: Van Ward
Van Ward
Lab Director

Parameter	Result	Reporting Limit	Unit	Method	Flag	Date	Time	Analyst
Filtration	YES					10/18/2013	9:30	BW
Cyanide	<0.005	0.005	mg/L	SM 4500 CN-		10/21/2013	14:50	BW

Davis & Brown

PO Box 15038
Quincy, SC 29506
(843) 665-6746 FAX: (843) 629-1444

Certificate of Analysis

Client:	HONDA ATV PLANT - TOM BAILEY 1111 HONDAWAY TIMMONSVILLE, SC 29161	South Carolina Certification Number: 21117
Contact:	TOM BAILEY	Receipt Date: 17-Oct-13
Client #:	982	Report Date: 06-Nov-13

Sample Date: 17-Oct-13
SDG #: SDG-095618
Lab Sample ID: LSID-211601
Sample ID: EFFLUENT(G)-GEN ENG

Approved By: Van Ward
Van Ward
Lab Director

Parameter	Result	Reporting Limit	Unit	Method	Flag	Date	Time	Analyst
Cyanide	<0.005	0.005	mg/L	SM 4500 CN-	S3	10/25/2013	16:29	KLP1

Davis & Brown

PO Box 15038
Quincy, SC 29506
(843) 665-6746 FAX: (843) 629-1444

Certificate of Analysis

Client: HONDA ATV PLANT - TOM BAILEY
1111 HONDAWAY
TIMMONSVILLE, SC 29161

South Carolina Certification Number: 21117

Contact: TOM BAILEY

Receipt Date: 17-Oct-13

Client #: 982

Report Date: 06-Nov-13

Sample Date: 17-Oct-13

SDG #: SDG-095618

Lab Sample ID: LSID-211602

Sample ID: EFFLUENT(G)-GEN ENG-FILTERED

Approved By:

Van Ward

Van Ward

Lab Director

Parameter	Result	Reporting Limit	Unit	Method	Flag	Date	Time	Analyst
Filtration	YES					10/18/2013	10:00	BW
Cyanide	<0.005	0.005	mg/L	SM 4500 CN-	S3	10/25/2013	16:30	KLP1

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: November 5, 2013

Company : Davis & Brown
Address : Post Office Box 15038

Quinby, South Carolina 29506
Contact: Mr. Van Ward
Project: Routine Analytical

Client Sample ID: 211601
Sample ID: 336068001
Matrix: Waste Water
Collect Date: 17-OCT-13 10:05
Receive Date: 23-OCT-13
Collector: Client

Project: DAVS00191
Client ID: DAVS001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Flow Injection Analysis											
EPA 335.4 Cyanide, Total "As Received"											
Cyanide, Total	U	ND	1.67	5.00	ug/L	1	KLP1	10/25/13	1629	1341788	1

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 335.4	EPA 335.4 Total Cyanide	MXVI	10/25/13	1500	1341785

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 335.4 SC	

Notes:

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: November 5, 2013

Company : Davis & Brown
Address : Post Office Box 15038

Quinby, South Carolina 29506

Contact: Mr. Van Ward
Project: Routine Analytical

Client Sample ID: 211602

Project: DAVS00191

Sample ID: 336068002

Client ID: DAVS001

Matrix: Waste Water

Collect Date: 17-OCT-13 10:05

Receive Date: 23-OCT-13

Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Flow Injection Analysis											
EPA 335.4 Cyanide, Total "As Received"											
Cyanide, Total	U	ND	1.67	5.00	ug/L	1	KLPI	10/25/13	1630	1341788	1

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 335.4	EPA 335.4 Total Cyanide	MXVI	10/25/13	1500	1341785

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 335.4 SC	

Notes:



November 05, 2013

Mr. Van Ward
Davis & Brown
Post Office Box 15038
Quinby, South Carolina 29506

Re: Routine Analytical
Work Order: 336068

Dear Mr. Ward:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on October 23, 2013. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at (843) 556-8171, ext. 4289.

Sincerely,

Julie Robinson

Julie Robinson
Project Manager

Purchase Order: 14-0-154
Enclosures



GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

**Certificate of Analysis Report
for**

DAVS001 Davis & Brown

Client SDG: 336068 GEL Work Order: 336068

The Qualifiers in this report are defined as follows:

- * A quality control analyte recovery is outside of specified acceptance criteria
- ** Analyte is a Tracer compound
- ** Analyte is a surrogate compound
- U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

The designation ND, if present, appears in the result column when the analyte concentration is not detected above the limit as defined in the 'U' qualifier above.

This data report has been prepared and reviewed in accordance with GEL Laboratories LLC standard operating procedures. Please direct any questions to your Project Manager, Julie Robinson.

Reviewed by

Julie Robinson

GEL LABORATORIES LLC

2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Report Date: November 5, 2013

Page 1 of 2

Davis & Brown
Post Office Box 15038
Quincy, South Carolina

Contact: Mr. Van Ward

Workorder: 336068

Paramname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Flow Injection Analysis											
Batch	1341788										
QC1202974419	336026007	DUF									
Cyanide, Total		U	ND	U	ND	ug/L	N/A		KLP1	10/25/13	16:26
QC1202974418	LCS										
Cyanide, Total	50.0				46.2	ug/L	92.4	(90%-110%)		10/25/13	16:25
QC1202974417	MB										
Cyanide, Total				U	ND	ug/L				10/25/13	16:24
QC1202974420	336026007	MS									
Cyanide, Total	100	U	ND		92.1	ug/L	92.1	(60%-124%)		10/25/13	16:27

Notes:

The Qualifiers in this report are defined as follows:

- < Result is less than value reported
- > Result is greater than value reported
- B The target analyte was detected in the associated blank.
- E General Chemistry--Concentration of the target analyte exceeds the instrument calibration range
- H Analytical holding time was exceeded
- J Value is estimated
- N/A RPD or %Recovery limits do not apply.
- N1 See case narrative
- ND Analyte concentration is not detected above the detection limit
- NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Q One or more quality control criteria have not been met. Refer to the applicable narrative or DER.
- R Per section 9.3.4.1 of Method 1664 Revision B, due to matrix spike recovery issues, this result may not be reported or used for regulatory compliance purposes.
- R Sample results are rejected
- U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Z Paint Filter Test--Particulates passed through the filter, however no free liquids were observed.
- ^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.
- d 5-day BOD--The 2:1 depletion requirement was not met for this sample
- e 5-day BOD--Test replicates show more than 30% difference between high and low values. The data is qualified per the method and can be used for reporting purposes

GEL LABORATORIES LLC

2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Workorder: 336068

Page 2 of 2

Paramname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
-----------	-----	--------	------	----	-------	------	------	-------	-------	------	------

h Preparation or preservation holding time was exceeded

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more.

^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

* Indicates that a Quality Control parameter was not within specifications.

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

There are no "Data Exception Reports" associated with this analytical report.

**DAVIS & BROWN**124 W. McIver Road
Florence, SC 29501PH: 843-655-6746
FAX: 843-655-2208

PAGE # ____ OF ____

REGULATORY: YES ☒ NO**CHAIN OF CUSTODY RECORD**

TURNAROUND TIME:

____ STANDARD RUSH ____ P1
____ P2

CLIENT:

Davis & Brown

ADDRESS:

PHONE:

FAX:

SAMPLE ANALYSIS REQUESTED

Preservative

TYPE: Grab / Composite

TOTAL # OF CONTAINERS

C

C

USE CODES TO INDICATE IF SAMPLE WAS

FILTERED OR PRESERVED: A = HNO₃B = HCL D = H₂SO₄ F = FILTRATIONC = NaOH E = Na₂S₂O₃ G = ZINCACETATE

PROGRAM AREA: D = DRINKING WATER

G = GROUNDWATER S = SOLID SL = SLUDGE

W = WASTEWATER O = OTHER

PLEASE PRINT LEGIBLY

SHADED AREAS FOR LAB USE ONLY

NOTES

LAB ID

SAMPLE ID

DATE

TIME

INITIAL

211601

10/17/13 1005

G

1

1

Fill in the Number of Containers for EACH Test

211602

10/17/13 1005

G

1

1

SAMPLER SIGNATURE

FLOW INFO

ICE YES NO ICE
PACKRECEIPT
TEMP: ____ °C

Relinquished by:

Date:

Time:

Relinquished by:

Date:

Time:

Relinquished by:

Date:

Time:

Received by:

Date:

Time:

Received by:

Date:

Time:

Received by:

Date:

Time:

Comments:

SAMPLE RECEIPT & REVIEW FORM

Client: <u>DAVIS & BROWN</u>		SDG/AR/COC/Work Order: <u>33120687</u>	
Received By: <u>SHANTA WHITLOCK</u>		Date Received: <u>10-23-13 @ 9:00</u>	
Suspected Hazard Information	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.	
COC/Samples marked as radioactive?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): <u>36 cpm</u>	
Classified Radioactive II or III by RSO?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes, Were swipes taken of sample containers < action levels?	
COC/Samples marked containing PCBs?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
Package, COC, and/or Samples marked as beryllium or asbestos containing?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes, samples are to be segregated as Safety Controlled Samples, and opened by the GEL Safety Group.	
Shipped as a DOT Hazardous?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Hazard Class Shipped: UN#:	
Samples identified as Foreign Soil?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		

Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1 Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2 Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Preservation Method: <u>ice bags</u> Blue ice Dry ice None Other (describe) <u>*all temperatures are recorded in Celsius</u>
2a Daily check performed and passed on IR temperature gun?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Temperature Device Serial #: <u>51050004</u> Secondary Temperature Device Serial # (If Applicable):
3 Chain of custody documents included with shipment?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4 Sample containers intact and sealed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
5 Samples requiring chemical preservation at proper pH?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's, containers affected and observed pH: If Preservation added, Lot#:
6 VOA vials free of headspace (defined as < 6mm bubble)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's and containers affected:
7 Are Encore containers present?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	(If yes, immediately deliver to Volatiles laboratory)
8 Samples received within holding time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ID's and tests affected:
9 Sample ID's on COC match ID's on bottles?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's and containers affected:
10 Date & time on COC match date & time on bottles?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's affected:
11 Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's affected:
12 Are sample containers identifiable as GEL provided?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
13 COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
14 Carrier and tracking number.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: FedEx Air FedEx Ground <u>UPS</u> Field Services Courier Other <u>12E60 E76 03 9002 6800</u>

Comments (Use Continuation Form if needed):

PM (or PMA) review: Initials

gm

Date

10/23/13

Page

1 of 1

List of current GEL Certifications as of 05 November 2013

State	Certification
Alaska	UST-110
Arkansas	88-0651
CLIA	42D0904046
California NELAP	01151CA
Colorado	SC00012
Connecticut	PH-0169
Delaware	SC000122013-10
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330-12-00283, P330-12-00284
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC000122013-10
Idaho Chemistry	SC00012
Idaho Radiochemistry	SC00012
Illinois NELAP	200029
Indiana	C-SC-01
Kansas NELAP	E-10332
Kentucky	90129
Louisiana NELAP	03046 (A133904)
Louisiana SDWA	LA130005
Maryland	270
Massachusetts	M-SC012
Michigan	9976
Mississippi	SC000122013-10
Nebraska	NE-OS-26-13
Nevada	SC000122013-2
New Hampshire NELAP	2054
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
Oklahoma	9904
Pennsylvania NELAP	68-00485
Plant Material Permit	PDEP-12-00260
South Carolina Chemistry	10120001
South Carolina GVL	23611001
South Carolina Radiochemi	10120002
Tennessee	TN 02934
Texas NELAP	T104704235-13-8
Utah NELAP	SC000122013-11
Vermont	VT87156
Virginia NELAP	460202
Washington	C780-12
Wisconsin	999887790

DAVIS & BROWN

Data Qualifiers

Within the attached report, some analytical data may be reported as Qualified Data as indicated by Data Qualifier or flag next to the result. **The data qualifier "S" indicates that the analysis was performed by another South Carolina certified lab. This table summarizes the South Carolina Lab Certification Numbers for those laboratories.**

S	South Carolina Lab Certification Number: 23101
S1	South Carolina Lab Certification Number: 93013
S2	South Carolina Lab Certification Number: 23105
S3	South Carolina Lab Certification Number: 10120
S4	South Carolina Lab Certification Number: 84002
S5	South Carolina Lab Certification Number: 32117
S6	Agricultural Service Laboratory Clemson University
S7	South Carolina Lab Certification Number: 36001
S8	Lab samples were subcontracted. See attached documentation.
S9	South Carolina Lab Certification Number: 94014001; 94014002
S10	South Carolina Lab Certification Number: 84009
S11	South Carolina Lab Certification Number: 96026; 96031; 98001; 73006; 98016 Note: S11A indicates AES Laboratory; S11G indicates GCAL Laboratory
S12	AASHTO R18 Certified
S13	South Carolina Lab Certification Number: 96012
S14	South Carolina Lab Certification Number: 89002
S15	*****
S16	South Carolina Lab Certification Number: 84004
S17	South Carolina Lab Certification Number: 96037001
S18	South Carolina Lab Certification Number: 95005
S19	South Carolina Lab Certification Number: 23104
S20	South Carolina Lab Certification Number: 96027001
S21	South Carolina Lab Certification Number: 21005
S22	South Carolina Lab Certification Number: 24110
S23	South Carolina Lab Certification Number: 84001001
S24	South Carolina Lab Certification Number: 82014001
S25	Sample was analyzed by Microseeps, Inc Laboratory
S26	North Carolina Lab Certification Number: 21 (Wilson Division NC00120)
S27	South Carolina Lab Certification Number: 40569
S28	South Carolina Lab Certification Number: 32571

**DAVIS & BROWN**124 W. McIver Road
Florence, SC 29501PH: 843-655-6746
FAX: 843-656-2208PAGE # 95018 OF 1REGULATORY: YES ☒ NO**CHAIN OF CUSTODY RECORD**TURNAROUND TIME: STANDARD P1
RUSH P2

CLIENT:

Honda

ADDRESS:

PHONE:

FAX:

SAMPLE ANALYSIS REQUESTED

Preservative

C

TYPE: Grab / Composite

TOTAL # OF CONTAINERS

Cyanide

PROGRAM AREA

USE CODES TO INDICATE IF SAMPLE WAS
FILTERED OR PRESERVED: A = HNO₃
B = HCL D = H₂SO₄ F = FILTRATION
C = NaOH E = Na₂S₂O₃ G = ZINCACETATEPROGRAM AREA: D = DRINKING WATER
G = GROUNDWATER S = SOLID SL = SLUDGE
W = WASTEWATER O = OTHER

PLEASE PRINT LEGIBLY

SHADED AREAS FOR LAB USE ONLY

NOTES

LAB ID

SAMPLE ID

DATE

TIME

INITIAL

Fill in the Number of Containers for EACH Test

Honda
Effluent grab10-17-1710:05LD63XWFiltered211600Gen. Eng211601Gen. Eng. Filt.211602

SAMPLER SIGNATURE

Long Dan

FLOW INFO

ICE
YES NO PACKRECEIPT
TEMP: 33°C

Relinquished by:

Date: 10-17-17 Time: 16:00

Relinquished by:

Date: Time:

Relinquished by:

Date: Time:

Received by:

Date: 10-17-17 Time: 16:00

Received by:

Date: Time:

Received by:

Date: Time:

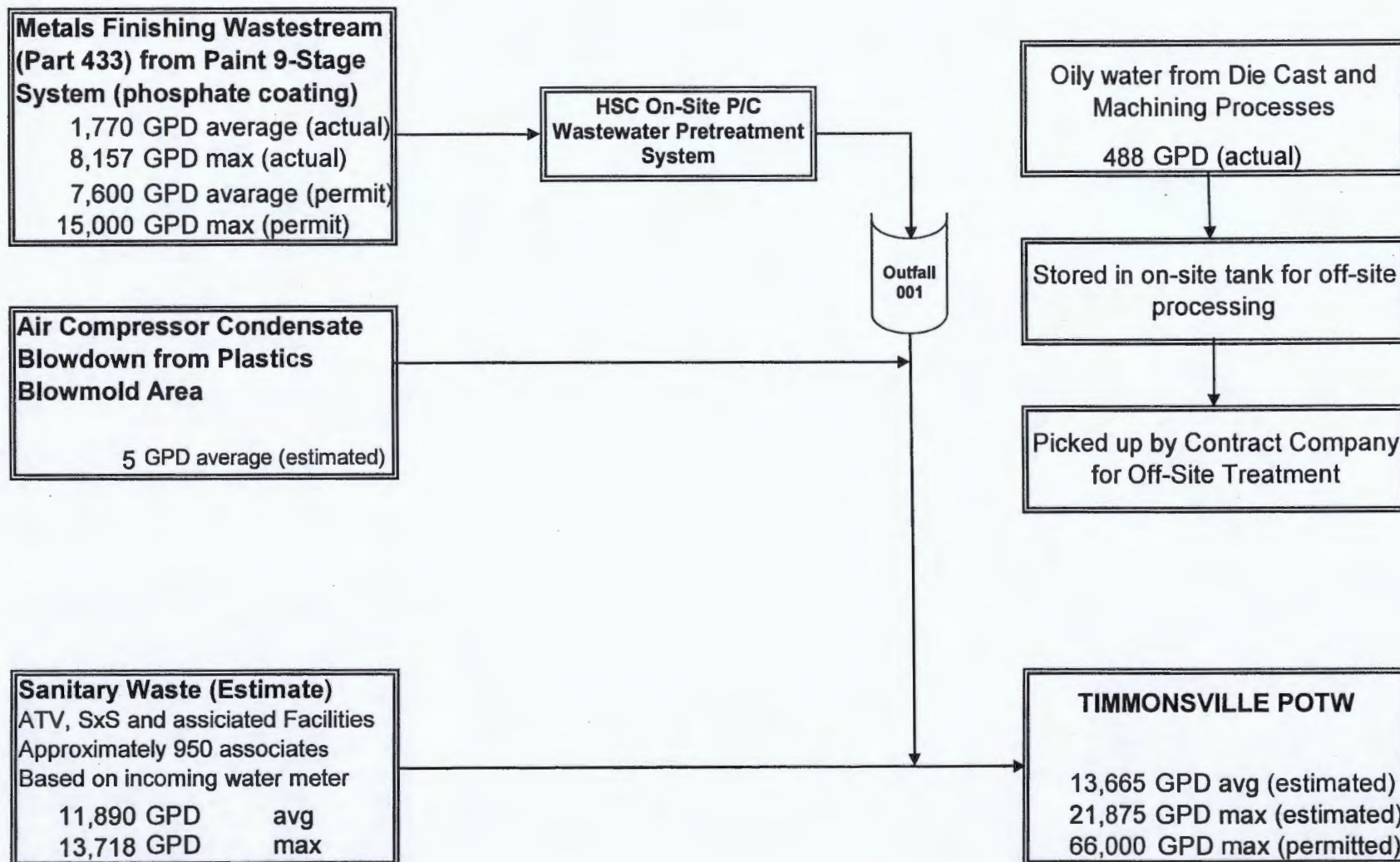
Comments:



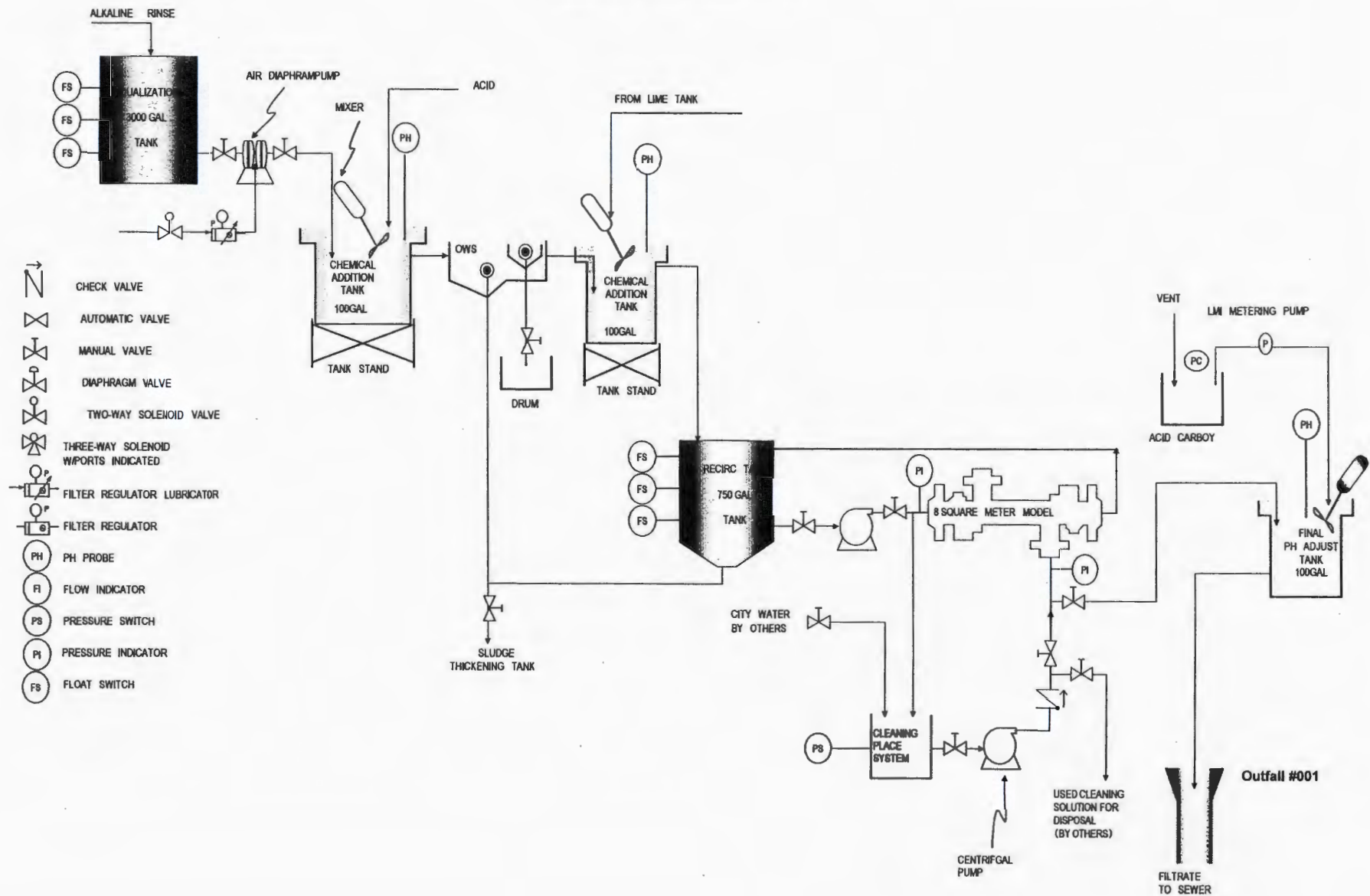
APPENDIX F

- 1. HSC WASTEWATER FLOW DIAGRAM**
- 2. 9-STAGE PHOSPHATE SYSTEM**
- 3. WASTEWATER PRETREATMENT
SYSTEM (ALKALINE WASTE WATER
FLOW & ZINC PHOSPHATE WASTE
WATER FLOW)**
- 4. PICTURE OF LOCATION OF OUTFALL
#001**

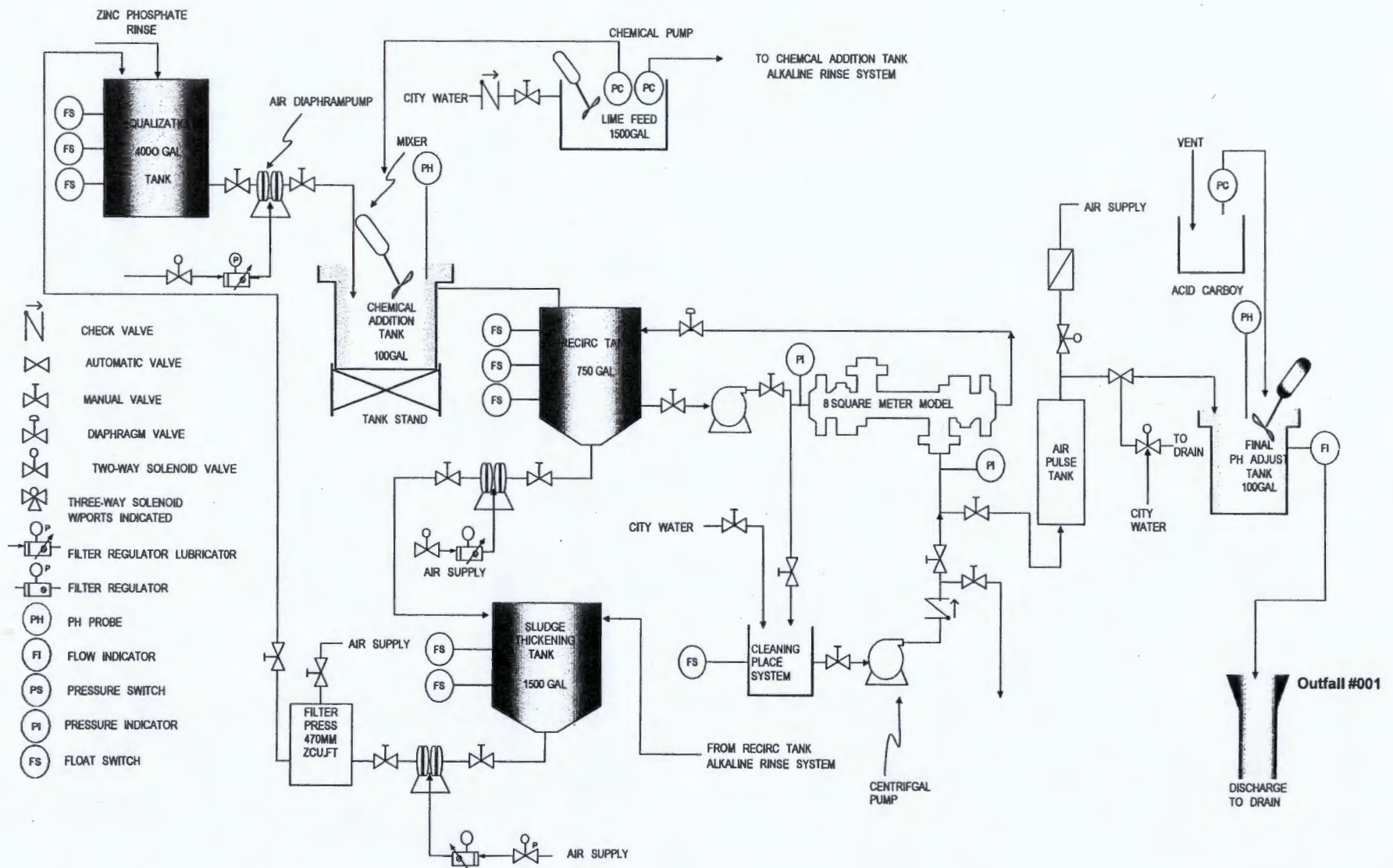
WASTEWATER FLOW DIAGRAM
HONDA OF SOUTH CAROLINA MFG, INC.
March 2014
(Using previous 12 month history)



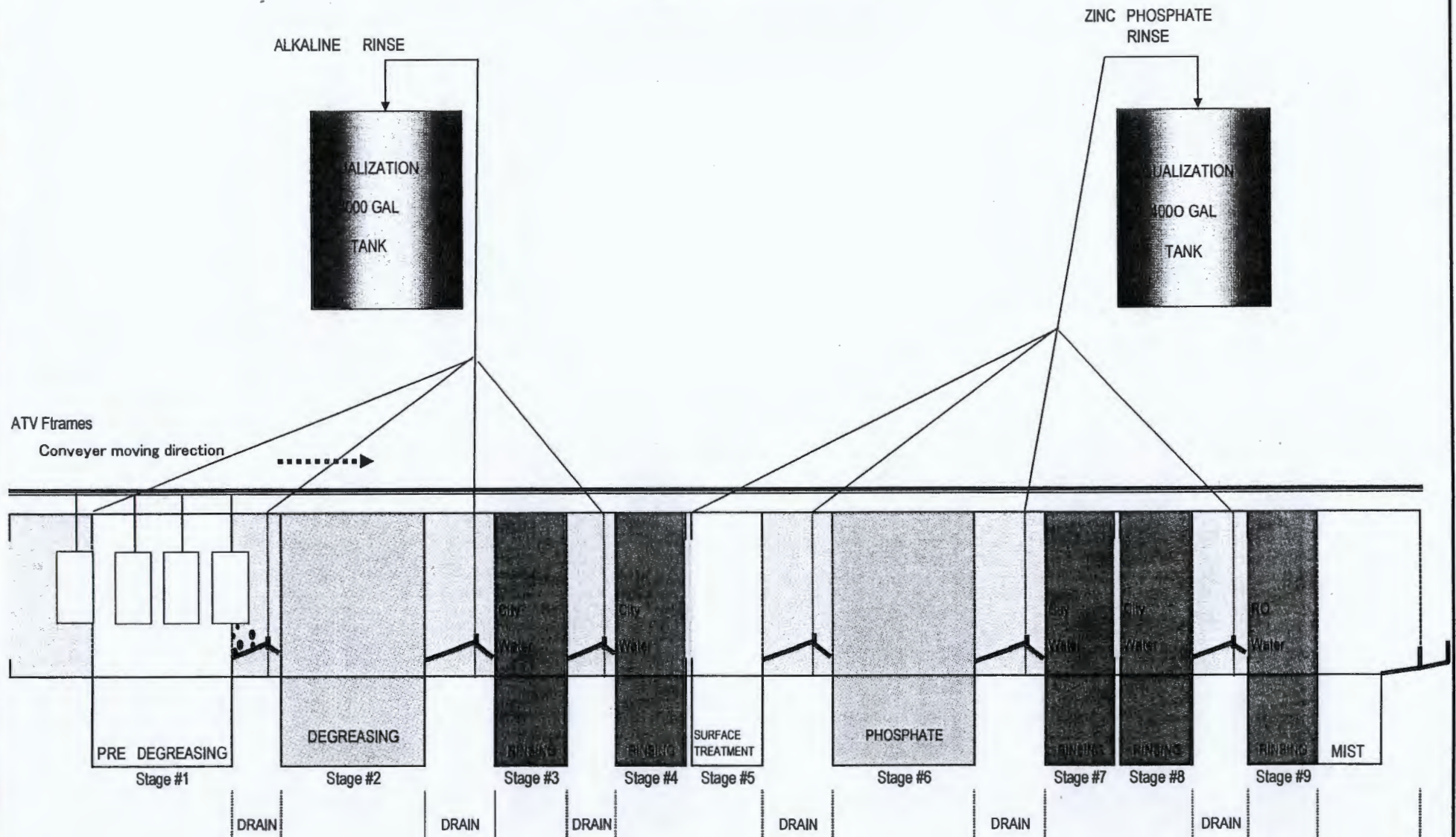
Alkaline Waste Water Flow



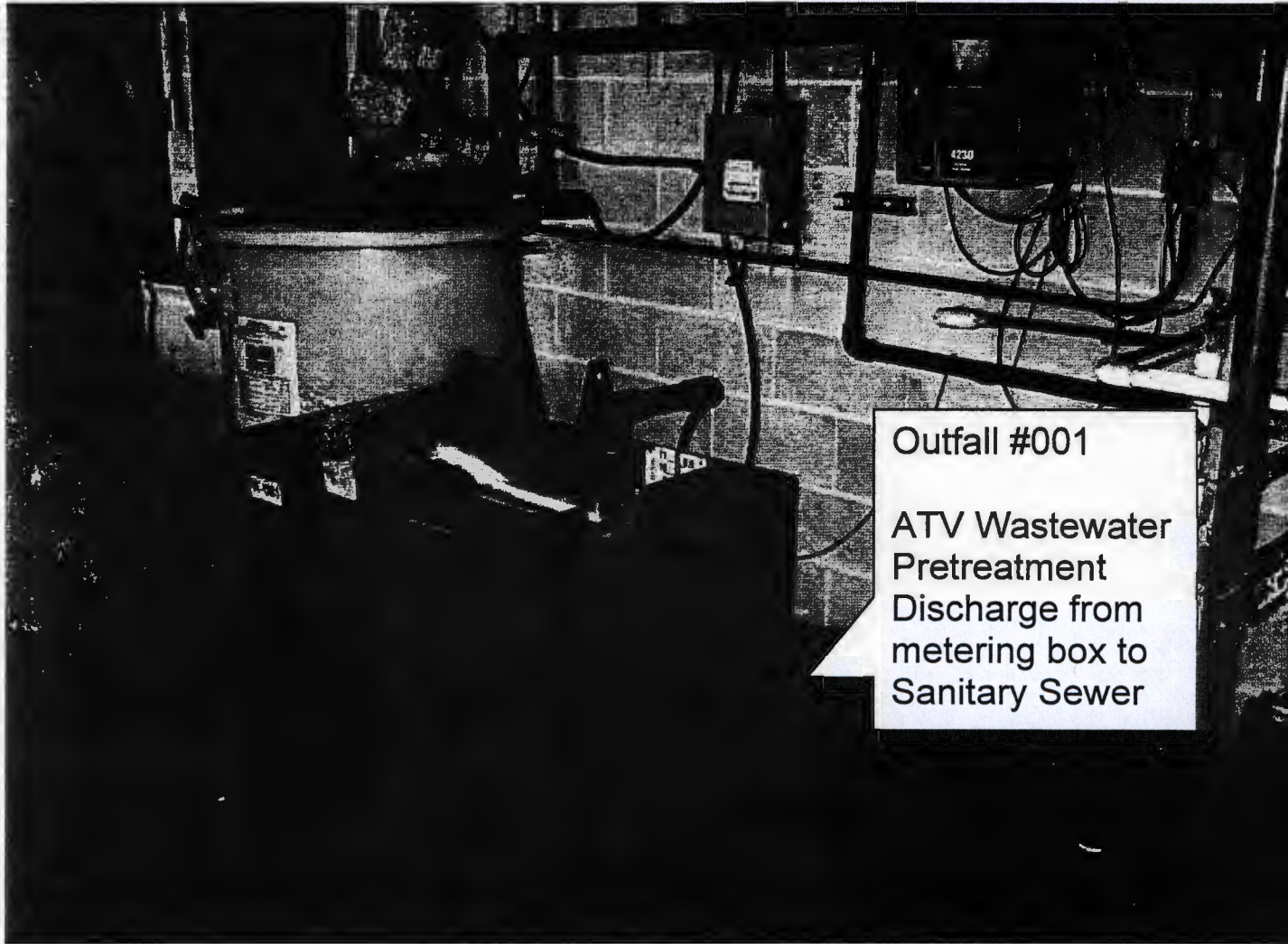
Zinc Phosphate Waste Water Flow



Honda of South Carolina Phosphate System (9-Stage Pretreatment)



Location of Regulated Outfall 001 in pretreatment room at
Honda of South Carolina



Outfall #001

ATV Wastewater
Pretreatment
Discharge from
metering box to
Sanitary Sewer

HONDA

Honda of South Carolina Mfg., Inc.

Honda of South Carolina Mfg., Inc
1111 Honda Way
Timmons ville, SC 29161 April 2014



BLUE SKIES FOR
OUR CHILDREN

APPENDIX G

CHEMICAL STORAGE & LOCATION

Chemical Storage Description

The majority of the chemicals used at HSC are stored in the Oil Storage Building or the Paint Department Chemical Storage Building. Both buildings are constructed with containment as part of the floor structure. A spill from the largest container in either building is contained. Some totes and drums of cutting fluids and oils are also stored under roof on the Machining dock. The containers are moved from the storage buildings to the department area where they are used by forklift. There are no floor drains in the storage buildings or the process areas where the chemicals are used. The storage containers include 5-gallon buckets, 55 gallon drums, 300 gallon totes, and 500 gallon portable tanks.

HSC also has two gasoline storage tanks. One 1,000 gallon gasoline tank at the ATV Building and one 275 gallon tank at the ATV Test Track. One 1,000 gallon diesel is located outside Building 2. All three tanks are aboveground double walled tanks in a covered containment areas. One 375 gallon diesel tank is inside the Fire Pump Building.

No chemical storage containers are cleaned at HSC except the pretreatment chemical drums. The empty drums are sent to a drum reconditioner or recycler. The totes that hold engine oil are returned to the oil supplier for refilling. The other totes are returned to the supplier or the recycler they recommend.

HONDA

Honda of South Carolina Mfg., Inc.

Honda of South Carolina Mfg., Inc
1111 Honda Way
Timmons ville, SC 29161 April 2014



BLUE SKIES FOR
OUR CHILDREN

APPENDIX H

HSC TTO MANAGEMENT PLAN

TOXIC ORGANIC MANAGEMENT PLAN

For

**Honda Of South Carolina Mfg., Inc
1111 Honda Way
Timmons ville, SC 29161**

TOXIC ORGANIC MANAGEMENT PLAN

Honda of South Carolina Mfg., Inc.

I. Description of Facilities and Solvent Use

A. Process Description

Honda Of South Carolina (HSC) manufactures All Terrain Vehicles (ATV's). The manufacturing process mainly involves assembly of parts from suppliers. The facility makes plastic fenders by injection molding, plastic gas tanks by blow molding, metal frames by MIG welding, and engine parts by aluminum die casting & machining. The frames are washed and a rust preventive coating is applied in a nine-stage washer in preparation for powder coat painting. The powder coat paint is cured in a oven then the frame is ready for assembly.

Wastewater types and volumes and volumes are depicted in Figure 1. The primary sources of process waters are the flows from the nine stages of the washer. This process uses alkaline cleaners to clean oil and grease from the frame then applies a nickel zinc phosphate coating in preparation for powder coat painting. The wastewater from the nine-stage washer goes to the wastewater pretreatment system. The pretreatment system uses acid addition (hydrochloric acid) to break the oil water emulsion. The oil is then removed in an oil/water separator. The wastewater then goes through lime addition and flocculation for metals reduction. The treated effluent is discharged to the Town of Timmons ville sewer system. The solids are removed by a pressure filter and sent to landfill.

B. Identification of Toxic Organic Chemicals Entering the Plant Wastewaters

1. Chemical Analysis of Treated Wastewaters

There should be no toxic organic chemicals in the plant wastewaters. The chemicals used in the nine-stage washer do not contain any regulated organic chemicals. There are no floor drains in the manufacturing area. The only connections to the city sewer are the ones in the wastewater treatment area, the boiler room, and janitor closets in the restrooms.

Samples were taken of the wastewater pretreatment effluent by Davis & Brown and analyzed for the toxic organics regulated under the metal finishing category. Toxic organic compounds detected at concentrations greater than 0.01 mg/l are listed in Table 1. Only one other compound (bromochloromethane) was above the detection limit of the analysis.

1



Figure 1

Table 1

Compound	Concentration (µg/l)	Concentration (mg/l)
Methyl Ethyl Ketone	84.0	0.0840
Chloromethane	52.8	0.0525

2. Identification of Solvents Used in Manufacturing Operations

- a) The chemicals used in the nine-stage frame pretreatment system and the wastewater pretreatment system do not contain any toxic organic chemicals.
- b) The touch-up paint operation uses solvent based paints and thinners that contain toxic organic chemicals. Waste paint is collected in a drum for recycle by Safety-Kleen. A gun cleaning station serviced by Safety-Kleen also uses a solvent containing toxic organic chemicals. Both of these items are hazardous waste and are recycled by Safety-Kleen according to State and Federal hazardous waste regulations. There are no floor drains in this area so these chemicals should not enter the city sewer.

II. Description of Controls Used

A. Floor Drains

There are no floor drains in the manufacturing, packing, or receiving portions of the facility. This eliminates the likelihood of dumping of anything into the city sewer. It also prevents any spills from entering the city sewer.

B. Solvent Substitutions

There is no need for solvent substitution. There are no toxic organic chemicals used in the manufacturing process that enter the wastewater pretreatment area or city sewers.

C. Process Modifications

There is no need for process modifications. There are a limited number of floor drains and they are not in the manufacturing area.

III. Toxic Organic Management Plan

As a result of the above analysis, Honda Of South Carolina Mfg., Inc. believes that all of its toxic organic pollutant discharges can be controlled by a toxic organic management plan in lieu of routine toxic organic monitoring.

A. Spent Solvent Disposal

Spent solvents/paint from the paint booth area is collected and stored in appropriate containers supplied by Safety-Kleen or other licensed hazardous waste contractor according to RCRA regulations. This waste is recycled by Safety-Kleen.

B. Training

All personnel in the Paint Section will receive additional instruction in the proper handling and disposal of gun cleaner and waste paint in order to keep regulated toxic organics out of industrial wastewater.

C. Inspections

The spray booth and gun cleaner area will be inspected routinely by the Paint Section to insure proper handling and disposal of gun cleaning solvent and waste paint.

D. Implementation

All provisions of this plan are fully implemented.

IV. Certification

"Based on my inquiry of the person or persons directly responsible for managing compliance with the permit limitations for total toxic organics (TTO), I certify that, to the best of my knowledge and belief, no dumping of concentrated toxic organics into the wastewaters has occurred since filing the last discharge monitoring report. I further certify that this facility is implementing this toxic organic pollutant management plan submitted to the Permitting Authority on July 28, 2000."



Bill Kalp
Senior Vice President
Honda Of South Carolina Mfg., Inc
Telephone: (843) 346-8002

HONDA

Honda of South Carolina Mfg., Inc.

Honda of South Carolina Mfg., Inc
1111 Honda Way
Timmons ville, SC 29161 April 2014



BLUE SKIES FOR
OUR CHILDREN

APPENDIX I

HSC SPCC PLAN

**SPILL PREVENTION, CONTROL
AND
COUNTERMEASURE PLAN
(SPCC PLAN)**

Prepared for:

**Honda of South Carolina Manufacturing, Inc.
1111 Honda Way
Timmonsville, South Carolina 29161**

Updated by:

**Thomas & Hutton
Post Office Box 7608
Columbia, South Carolina 29202-7608**

December 2013

T&H Project No. 24754.0000

TABLE OF CONTENTS

I.	GENERAL FACILITY INFORMATION.....	7
II.	INVENTORY OF SPILLS AND POTENTIAL SPILL SOURCES	8
III.	STRUCTURES, EQUIPMENT, AND PROCEDURES	17
IV.	SPILL CONTROL AND NOTIFICATION PROCEDURES	20
V.	CONFORMACE WITH APPLICABLE GUIDELINES	24

Appendix A – Oil Pollution Prevention Regulations, 40 CFR 112, 110, 109

Appendix B – SPCC Plan Review

Appendix C - Figures

Appendix D – Containment Volume Calculations

Appendix E – Truck Off-Loading Procedures

Appendix F – Spill Report Form

Appendix G – SPCC Inspection Forms

Appendix H – Steel Tank Industry Standard SP001

Appendix I – Spill Training Form

Appendix J – Recommendations

Cross-Reference with SPCC Provisions (40 CFR 112.7)

This SPCC Plan does not follow the exact order presented in 40 CFR part 112. Section headings identify, where appropriate, the relevant section(s) of the SPCC rule. This table presents a cross-reference of Plan sections relative to applicable parts of 40 CFR Part 112.

Provision	Description	Location in Plan
112.3(d)	Professional Engineer Certification	Page 4
112.5	Plan Review and Amendment	Page 6, App B
112.7	General Requirements – Cross Reference	Page 2
112.7	General Requirements – Management Approval	Page 3
112.7(a)(1)	General Requirements – General Information	Page 7, Figures
112.7(b)	Potential Discharge and Rate of Flow	Page 8 and 11
112.7(c)	Secondary Containment	Pg 9,10,17, App D
112.7(d)	Contingency Planning	Page 20 and 21
112.7(e)	Inspections, Tests and Records	Page 27
112.7(f)	Employee Training and Discharge Prevention	Page 20 and 27
112.7(g)	Security	Page 27
112.7(h)	Loading/Unloading	Page 26, App E
112.7(i)	Brittle Fracture Evaluation Requirements	N/A
112.7(j)	Conformance with State Requirements	Page 20
112.8(b)	Facility Drainage	Page 8
112.8(c)(1)	Construction/Compatibility	Page 24
112.8(c)(2)	Secondary Containment	Page 9, 10, 16, 24
112.8(c)(3)	Drainage of Diked Areas	Page 24
112.8(c)(4)	Buried Tank Corrosion Protection	N/A
112.8(c)(5)	Partially Buried and Bunkered Tanks	N/A
112.8(c)(6)	Inspections	Page 27
112.8(c)(7)	Heating Coils	N/A
112.8(c)(8)	Overfill Protection	Page 25 and 28
112.8(c)(9)	Effluent Treatment Facilities	N/A
112.8(c)(10)	Visible Discharges	Page 20 and 24
112.8(c)(11)	Mobile Portable Containers	Page 9, 10, 18, 19
112.8(d)	Transfer Operations, Pumping, and In-Plant Processes	Page 25 and 26
112.20(e)	Certification of Substantial Harm Determination	Page 5

SPILL PREVENTION CONTROL AND COUNTERMEASURE PLAN

Management Approval

I have reviewed this Spill Prevention Control and Countermeasure Plan and am in agreement with the goals and objectives. My signature below constitutes authorization for the commitment of resources necessary for implementation of this plan. Further; "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who managed the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Signature _____ Date _____
Brian Newman
President

**SPILL PREVENTION CONTROL AND
COUNTERMEASURE PLAN**


Engineer Certification

By means of this certification, I hereby certify and attest that:

- I am familiar with the requirements of 40 CFR Part 112;
- I, or my agent, have visited and examined the facility;
- The Plan has been prepared in accordance with good engineering practice, including consideration of applicable industry standards, and with the requirements of 40 CFR 112;
- Procedures for required inspections and testing have been established; and
- The Plan is adequate for the facility.

Lisa B. Muzekari, P.E.
Printed Name of Registered
Professional Engineer

4-2-14
Date


Signature No. 17287
SC17287
Registration Number

Company Name: Thomas & Hutton
PO Box 7608
Columbia, South Carolina 29202-7908
(803) 451-6789

Certification of the Applicability of the Substantial Harm Criteria

Facility Name: Honda of South Carolina Manufacturing, Inc.
Facility Address: 1111 Honda Way • Timmons ville, South Carolina 29161

1. Does the facility transfer oil over water to or from vessels and does the facility have a total oil storage capacity greater than or equal to 42,000 gallons?

Yes _____ No X

2. Does the facility have a total oil storage capacity greater than or equal to one million gallons and does the facility lack secondary containment that is of sufficient size to contain the capacity of the largest aboveground oil storage tank plus sufficient freeboard to allow for precipitation within any aboveground oil storage tank area?

Yes _____ No X

3. Does the facility have a total oil storage capacity greater than or equal to one million gallons and is the facility located at a distance such that a discharge from the facility could cause injury to fish and wildlife and sensitive environments?

Yes _____ No X

4. Does the facility have a total oil storage capacity greater than or equal to one million gallons and is the facility located at a distance such that a discharge from the facility would shut down a public drinking water intake?

Yes _____ No X

5. Does the facility have a total oil capacity greater than or equal to one million gallons and has the facility experienced a reportable oil spill in an amount greater than or equal to 10,000 gallons within the last five years?

Yes _____ No X

Certification

I under penalty of law that I have personally examined and am familiar with the information submitted in this document, and that based on my inquiry of those individuals responsible for obtaining this information, I believe that the submitted information is true, accurate, and complete.

Signature _____ Date _____
Brian Newman, President

FOREWORD

This revised Spill Prevention, Control, and Countermeasure (SPCC) Plan has been prepared in accordance with revisions to Title 40 of the Code of Federal Regulations, Part 112 (40 CFR 112) "Oil Pollution Prevention--Non-transportation Related Onshore and Offshore Facilities" which became effective February 17, 2006. These regulations require the preparation and implementation of an SPCC Plan for all non-transportation related facilities which, due to their location, could reasonably be expected to discharge oil in harmful quantities, as defined in 40 CFR 110 "Discharge of Oil", into or upon the navigable waters of the United States or adjoining shorelines. (A copy of the Oil Pollution Prevention Regulations is provided in Appendix A)

The specific guidelines that were followed in the preparation and implementation of this SPCC Plan have been carefully thought out and prepared in accordance with good engineering practices. This SPCC Plan has the full approval of management at a level with authority to commit the necessary resources to implement this plan.

The SPCC Plan shall be amended whenever there is a change in facility design, construction, operation, or maintenance, which has a significant effect on the potential for the release of pollutants, such as oil, to the environment. The plan must also be amended if it proves to be ineffective in eliminating or significantly minimizing the release of pollutants from sources identified as potential pollution sources. For example, the SPCC Regulations require amendment of the SPCC Plan if a discharge of more than 1,000 gallons of oil occurs in a single event; or two discharges of 42 gallons of oil or more occur in a twelve (12) month period. Occasionally, situations may develop which require a modification to the pollution prevention and control measures at this facility. If conditions of the physical aspects of the facility change, or maintenance procedures are altered, this plan must be amended within six (6) months after modifications occur.

Keeping the plan current is a SPCC requirement; therefore, annual comprehensive site compliance evaluations will be conducted to provide a basis for evaluating the overall effectiveness of the SPCC Plan.

A South Carolina Registered Professional Engineer shall certify this plan initially and every five (5) years thereafter. The SPCC regulations require this certification. Review will insure consistent site conditions and determine if new spill prevention and clean up technology is available which would significantly decrease the likelihood of a spill or the effects of such. If so, this plan must be amended to incorporate such, within a period of six (6) months after review. No revisions will be effective until a Professional Engineer registered in South Carolina has certified them. Appendix B contains a list of modifications and/or recertifications for this SPCC Plan.

PART I
GENERAL FACILITY INFORMATION

A. Name, mailing address, and telephone number of facility:

Honda of South Carolina Manufacturing, Inc.
1111 Honda Way
Timmonsville, South Carolina 29161
Facility Phone Number: (843) 346-8000

B. Location of facility:

Honda of South Carolina Manufacturing, Inc.
1111 Honda Way
Timmonsville, South Carolina

C. Name, title, and telephone number of designated person accountable for oil spill prevention and control at the facility:

Mr. Wendell Hughes, EHS Assistant Manager
Office: (843) 346-8201
Home: (843) 362-2773

D. Type of facility:

ATV and SxS Manufacturing

E. Description of facility location (40 CFR 112.4(a)(6)):

The facility is located near Timmonsville, in Florence County. The site is approximately 600 acres and is occupied by two large manufacturing buildings (ATV manufacturing (Building 1) and SxS manufacturing (Building 2)), training building (Building 3), several small ancillary service structures, truck parking, and a vehicle test track. Interstate 95 borders the site to the east. Timmonsville is located to the west. Figure 1 illustrates the plant layout and Figure 2 illustrates the plant location and the surrounding topography (Appendix C).

F. Facility operation characteristics:

The facility operates twenty-four (24) hours a day, seven (7) days a week, fifty-two (52) weeks a year. Access to the facility is controlled at manned security gates. All visitors and deliveries are checked in through the manned security gates.

PART II

INVENTORY OF SPILLS AND POTENTIAL SPILL SOURCES

A. Reportable spills (40 CFR 112.4(a)):

There have been no discharges of oil into or upon the navigable waters of the United States in the past three (3) years. There have been no spills of oil in reportable quantities in the past three years. There have been four non-significant spills of oil at the plant. None of the spills reached the site drainage system. One spill involved a 390 gallon tote of engine oil that was dropped during transfer to storage, one spill involved a hydraulic hose blowout on a contractor trash truck, one spill involved a waste die lube spill, and one spill involved a leak of cutting oil from an aluminum turnings roll-off. Each spill was cleaned up, a spill report prepared, and the spill cleanup closed. Spill reports are maintained by the EHS Department.

B. Prediction of flow (40 CFR 112.7(b)):

Based on the natural and constructed site drainage systems, there are several possible flow patterns for spilled materials within the plant site. All of the site drainage associated with the manufacturing portion of the plant site is discharged to one (1) of three (3) detention basins. Each of the detention basins has a storm water outfall. The discharge from any one of the detention basins will enter a wet weather conveyance that ultimately discharges to Lake Swamp located to the northeast of the plant site. At the test track flow will travel overland as sheet flow to a wet weather conveyance and eventually reach Lake Swamp. Figure 1 illustrates the site storm drain system (Appendix C).

C. Rate of flow (40 CFR 112.7(b)):

The rate of flow from the manufacturing portion of the site (e.g. oil storage, gasoline storage, etc.) to any of the site detention basins is estimated to be 15 minutes. The rate of flow from a detention basin to an offsite receiving stream is estimated to be one (1) hour. This time estimate is based on the materials involved, the surface topography, and the distance to the surface waters of Lake Swamp (~ 2,000 feet). The rate of flow overland from the test track (e.g., gasoline storage) to Lake Swamp is estimated to be greater than two (2) hours. This time estimate is based on the materials involved, the surface topography, and the distance to the surface waters of Lake Swamp (~ 1 mile).

D. Estimated quantity of materials per release event (40 CFR 112.7(b)):

Because all fuel and oil containers at this site have secondary containment or diversion structures (e.g., building enclosure), the major types of possible failures are in the structural integrity of a container, secondary containment or diversion structures, loading/unloading operations, and accidental damage to above ground piping. Based on the preventive measures that have been taken, the volume of material that may be released should be minimal. In the event of a catastrophic failure, the largest release volume would be the maximum volume of any storage vessel on site. Table 1 presents the facilities and equipment that could be potential sources if a failure occurred.

E. Description of the source and quantity (40 CFR 112.7(a)(3)(i) and (c)(1)):

The Honda of South Carolina Manufacturing, Inc. plant receives, stores, dispenses, and recycles for its own use: gasoline; diesel fuel; engine oil, gear oil, cutting oil; hydraulic oil; grease, brake fluid; antifreeze; and used oil.

Gasoline is stored at two (2) locations around the plant. A single 1,000 gallon aboveground gasoline tank is located outside Building 1 near the assembly receiving dock. The tank fill connection is integral to the tank. Gasoline is dispensed from the tank to the point of use in the AF Department in Building 1 through aboveground piping. A single 285 gallon aboveground gasoline tank is located at the ATV test track. The tank fill connection and fuel dispenser are integral to the tank.

No. 2 diesel fuel is stored in two (2) locations at the plant. A single 300 gallon aboveground diesel fuel storage tank located in the pump house. The tank fill connection is located on the exterior of the pump house. The associated piping is located aboveground inside the pump house. A single 1,000 gallon aboveground diesel fuel storage tank is located outside Building 2 near the shipping and receiving dock. The tank fill connection is integral to the tank. Diesel fuel is dispensed from the tank by means of a pump/dispenser for manual fill of yard dogs.

Waste die lube is stored in a 15,000 gallon vertical storage tank outside of Building 1. The aboveground storage tank has concrete secondary containment and is filled from the top by pumping from inside the building and is equipped with an ultrasonic electronic level system. The tank is emptied by a vacuum tanker and is transported for disposal/treatment.

Table 1. Identified Potential Sources of Spills

<i>Potential Source</i>	<i>Type of Secondary Containment</i>	<i>Type of Failure</i>
Oil Storage Building Grease – Drums Antifreeze – Drums Brake Fluid – Drums Nox Rust – Drums Cutting Oil – Totes/Drums Engine Oil – Totes Gear Oil – Totes	Building Enclosure/ Secondary Containment Structure	<u>Possible failures:</u> Structural failure, Corrosion, Rupture, Operator neglect, Equipment failure, and/or Improper procedure
Regulated Waste Building Used Oil – Totes/Drums	Building Enclosure/ Secondary Containment Structure	
Pump House Diesel Fuel Tank	Building Enclosure/ Double Walled Tank	
Waste Die Lube Tank Waste Die Lube	Secondary Containment Structure	
Yard Dog Fuel Tank Diesel Fuel Tank	Double Walled Tank/ Concrete Containment Structure	
Test Track Fuel Tank Gasoline Tank	Double Walled Tank	
Grounds Maintenance Gasoline/Diesel - Drums	Spill Pallet Under Canopy	
Compactors/Bailer Hydraulic Fluid - Reservoirs	Steel Containment Basin	
In-Use Process Equipment Hydraulic Oil – Sumps/Tanks Cutting Oil – Sumps Engine Oil – Totes Brake Fluid – Drums Antifreeze – Tote Nox Rust – Tank	Building Enclosure	

Engine oil, gear oil, cutting oil, hydraulic oil, grease, brake fluid, and antifreeze are stored in the Oil Storage Building and utilized throughout the plant. These materials are stored in containers ranging from 55 gallon drums, 275 gallon totes, 390 gallon

totes, to a 490 gallon tote. Material transfer from storage to the various in-plant points of use occurs manually (e.g., forklift). In process use of engine oil, gear oil, cutting oil, hydraulic oil, grease, brake fluid, and antifreeze takes place in equipment sumps/reservoirs and tanks, totes, and drums serving various process operations.

Used oil generated from maintenance activities is collected and stored in either 55 gallon drums or 390 gallon totes. The used oil drums and totes are stored in the Regulated Waste Building. Used oil is transferred manually from the various maintenance sites to the Regulated Waste Building in either 55 gallon drums or a 390 gallon tote. The used oil tote fill and discharge ports are integral to the tote. The drum fill port is integral to the drum.

Grounds maintenance stores a total of four (4) drums (2 gasoline, 2 diesel fuel) on a spill pallet under a canopy. The fuel is transferred manually for filling of grounds maintenance equipment.

There are three (3) compactors and a single bailer in use at the plant. Each of the compactors and bailer has a hydraulic system. Each of the compactor hydraulic systems has a 130 gallon hydraulic reservoir. The bailer has a 359 gallon hydraulic reservoir. All are located at Building 1.

Table 2 summarizes the quantity and location of each potential source.

F. Potential equipment failures(40 CFR 112.7(b)):

Spills would occur as a result of equipment failure or operator neglect. Major potential spills that may occur from tanks would result from seam failures, fitting failures, valve failures, foundation failures, and/or corrosion. Minor spills from tanks may be caused by tank overfill, operator neglect, pump failure, hose failure, and/or delivery truck leakage. Accidental damage of distribution piping may be an additional spill source. A spill may occur from the accidental collision with aboveground gasoline distribution pipe.

All engine oil, gear oil, cutting oil, hydraulic oil, grease, brake fluid, and antifreeze drums, totes, and equipment sumps/reservoirs/tanks are contained in enclosed buildings. Any spilled material would be contained inside the building and not exposed to the outside. A spill could occur during drum/tote delivery/unloading/transfer operations. The largest in-plant transfer quantity is a 390 gallon tote.

The three (3) compactors and bailer contain hydraulic systems with integral reservoirs. A leak from the hydraulic system may occur from hose failure, fitting failure, seam failure, or accidental damage from collision. The largest release quantity would be the capacity of the reservoir: compactor – 130 gallons; bailer – 359 gallons.

Spill quantities and rates of flow associated with the above failures would depend upon which facilities failed. The direction of flow from the identified sources is illustrated on the attached site plan (Figure 1, Appendix C).

Table 2. Information on Oil Storage

	<i>Material</i>	<i>Volume (gallons)</i>	<i>Quantity</i>	<i>Location</i>
Drums	Brake Fluid	55	15	Oil Storage Building
	Brake Fluid	55	8	In-Process Use
	Grease	55	3	In-Process Use – AF Department
	Nox Rust	55	4	In-Process Use – ATV Line
	Brake Fluid	55	4	In-Process Use – SxS Line
	Engine Oil	55	3	Regulated Waste Storage Building
	Nox Rust	55	15	Oil Storage Building
	Cutting Oil/Coolant	55	2	Oil Storage Building
	Grease	55	9	Oil Storage Building
	Gasoline	55	6	Oil Storage Building

Table 2 Continued. Information on Oil Storage

	<i>Material</i>	<i>Volume (gallons)</i>	<i>Quantity</i>	<i>Location</i>
Drums	Antifreeze	55	15	Oil Storage Building
	Gasoline	55	2	Grounds Maintenance Storage
	Diesel Fuel	55	2	Grounds Maintenance Storage
Tanks	Diesel Fuel	300	1	Pump House
	Gasoline	1,000	1	ATV Fuel Tank
	Diesel Fuel	1,000	1	Building 2 (Yard Dog) Fuel Tank
	Gasoline	285	1	Test Track Fuel Tank
	Waste Die Lube	15,000	1	Outside Die Cast
	Nox Rust	250	1	In-Process Use – Packing Department
	Machining Fluid	72	2	In-Process Use – AF Department

Table 2 Continued. Information on Oil Storage

	<i>Material</i>	<i>Volume (gallons)</i>	<i>Quantity</i>	<i>Location</i>
Tanks	Engine Oil	55	1	In-Process Use – AF Department
	Gear Oil	475	1	In-Process Use – AF Department
	Engine Oil	490	1	In-Process Use – AF Department
	Hydraulic Oil	145	2	In-Process Use – PO Department
	Hydraulic Oil	550	2	In-Process Use – PO Department
Totes	Antifreeze	275	2	In-Process Use – AF Department
	Engine Oil	390	1	In-Process Use – AF Department
	Engine Oil	390 (or 340)	4	In-Process Use – AE Department
	Engine Oil	340	1	In-Process Use – SxS AF
	Antifreeze	320	2	In-Process Use – SxS

Table 2 Continued. Information on Oil Storage

	<i>Material</i>	<i>Volume (gallons)</i>	<i>Quantity</i>	<i>Location</i>
Totes	Used Oil	390	2	Regulated Waste Storage Building
	Engine Oil	390	18	Oil Storage Building
	Gear Oil	390	2	Oil Storage Building
	Cutting Oil/Coolant	390	2	Oil Storage Building
Process Sumps/Reservoirs	Hydraulic Oil	8,337	Total for 40 Process Sumps	Machine Line
	Hydraulic Oil	143	Total for 1 Process Sump	Gear Cover Machining
	Hydraulic Oil	1,850	Total for 3 Process Sumps	Plastic Injection Machines
	Hydraulic Oil	500	Total for 2 Process Sumps	Plastic Blowmold Machines
	Hydraulic Oil	749	Total of 4 Reservoirs	Trash Compactors and Bailer

PART III
STRUCTURES AND/OR EQUIPMENT TO PREVENT SPILLS
FROM REACHING NAVIGABLE WATERWAYS

A. Description of structures and/or equipment (40 CFR 112.7(a)(3)(iii)):

The following provides a description of the containment structures and/or equipment utilized to prevent spilled oil from the identified potential sources from discharging into a navigable waterway. Secondary containment volume calculations are provided in Appendix D.

1. Storage tanks, totes, drums, and in-use process equipment

The ATV 1,000 gallon aboveground gasoline storage tank is a doubled walled tank (e.g., tank within a tank design). The tank is equipped with an interstice (i.e., space between the primary tank and secondary tank). The secondary tank has a plugged drain and access ports for visual inspection. The tank is located in a tertiary concrete containment structure. The concrete containment structure has a lockable drain valve that remains closed and locked. The tank is raised on saddles above the floor of the concrete containment structure. All sides and ends of the tank are visible for inspection. The tank has a visual level indicator. The tank fill connection and transfer pump are integral to the tank, which is located within the concrete containment structure. Collision barriers protect the tank and concrete containment structure. A strict delivery truck unloading procedure is enforced. A copy of the unloading procedure can be found in Appendix E.

The 1,000 gallon aboveground diesel fuel storage tank outside of Building 2 used for fueling the yard dogs is a doubled walled tank (e.g., tank within a tank design). The tank is equipped with an interstice (i.e., space between the primary tank and secondary tank). The secondary tank has a plugged drain and access ports for visual inspection. The tank is located in a tertiary concrete containment structure. The concrete containment structure does not have a drain. A small roof covers the tank and containment structure. The tank is raised on saddles above the floor of the concrete containment structure. All sides and ends of the tank are visible for inspection. The tank has a visual level indicator. The tank fill connection and transfer pump are integral to the tank, which is located within the concrete containment structure. The tank is equipped with a pump/dispenser for manual filling of yard dogs. A speed bump was installed on the driveway adjacent to the storage tank to contain any spills during fueling operations. The speed bump is equipped with a drain line and a valve. Collision barriers protect the tank and concrete containment structure. A strict delivery truck unloading procedure is enforced. A copy of the unloading procedure can be found in Appendix E.

The Test Track 285 gallon aboveground gasoline storage tank is a doubled walled tank (e.g., tank within a tank design). The tank is equipped with an interstice (i.e., space between the primary tank and secondary tank). The secondary tank has a plugged drain and access ports for visual inspection. The tank is located in a tertiary concrete containment structure. The concrete containment structure has a lockable drain valve that remains closed and locked. A small roof covers the tank and containment structure. The tank is raised on skids above the floor of the concrete containment structure. All sides and ends of the tank are visible for inspection. The tank has a visual level indicator. The tank fill connection and fuel dispenser pump are integral to the tank, which is located within the concrete containment structure. Collision barriers protect the tank and concrete containment structure. A strict delivery truck unloading procedure is enforced. A copy of the unloading procedure can be found in Appendix E.

The 300 gallon aboveground diesel fuel tank located in the Pump House is a doubled walled tank (e.g., tank within a tank design). The tank is equipped with an interstice (i.e., space between the primary tank and secondary tank). The secondary tank has a plugged drain and access ports for visual inspection. The tank is located in the enclosed Pump House. The tank is raised on stilts above the concrete floor of the Pump House. All sides and ends of the tank are visible for inspection. The tank has a visual level indicator. Diesel fuel is dispensed by gravity flow from the tank to the backup generator. The tank fill connection is located on the external wall of the Pump House. A strict delivery truck unloading procedure is enforced. A copy of the unloading procedure can be found in Appendix E.

The 15,000 gallon aboveground waste die lube storage tank is located outside of Building 1. The tanks is a single walled tank is contained inside a concrete block secondary containment structure with epoxy coating. The tank is vertical and visible on the sides and the top for inspection. The tank is filled from the top from inside the building by means of a pump. The tank is equipped with an ultrasonic electronic level system that is connected to the Simplex System and alarm. The tank is emptied by means of a vacuum tanker for disposal/treatment. A strict unloading procedure is enforced. A copy of the unloading procedure can be found in Appendix E.

Used oil is stored in drums and totes located in the Regulated Waste Building. The Regulated Waste Building has a sloped concrete floor and non-discharge collection trench. Used oil is transferred manually from the in-plant point of collection to storage and from storage to contracted oil trucks for offsite recycling.

Engine oil, gear oil, cutting oil, hydraulic oil, grease, brake fluid, and antifreeze are stored in the Oil Storage Building. These materials are stored in containers ranging from 55 gallon drums, 275 gallon totes, 390 gallon totes, to

a 490 gallon tote. The Oil Storage Building has a sloped concrete floor and non-discharge collection trench. Material transfer from storage to the various in-plant points of use occurs manually (e.g., forklift). In process use of engine oil, gear oil, cutting oil, hydraulic oil, grease, brake fluid, and antifreeze takes place in equipment sumps/reservoirs and tanks, totes, and drums serving various process operations. The plant floors are concrete and have no drains. Spill absorbent materials and over-pack drums are kept in the Regulated Waste Building.

The three (3) compactors and bailer are located on concrete/asphalt paved areas. Each of the integral hydraulic reservoirs has a steel secondary containment basin.

Gasoline and diesel fuel are stored in drums on a spill pallet under a canopy for Grounds Maintenance needs. The Grounds Maintenance equipment is fueled manually from the drums.

2. Transfer pumps

All of the gasoline and diesel fuel tanks rely on the delivery truck transfer pump to fill the tank (a strict tank fill procedure is enforced). The ATV gasoline tank has an internal transfer pump that is used to deliver gasoline to the fuel dispensers located inside the plant building. The Test Track gasoline tank has an internal pump that serves the tank mounted fuel dispenser. The Yard Dog diesel fuel tank has a tank mounted hand pump that is used to dispense fuel from the tank to yard dogs. The Pump House diesel fuel tank does not have a transfer pump. The diesel fuel is dispensed by gravity flow.

3. Valves

All of the containment structures have locked drain valves or have no drain valve.

4. Piping

The ATV gasoline tank, Waste Die Lube tank, and Pump House diesel fuel tank are the only tanks that have associated piping. All of the Pump House diesel fuel piping is located aboveground inside the Pump House. The ATV and Waste Die Lube piping is located aboveground on steel I-beam supports. All of the piping can be visually inspected. The Test Track and Yard Dog Tanks have flexible hoses associated with the tank mounted fuel dispensers.

PART IV
SPILL CONTROL AND NOTIFICATION PROCEDURES

A. Spill control and notification procedures

1. Spill control procedures (40 CFR 112.7(a)(3)(iii) and 112.7(c)(1)(vii)):

Plant associates will be used to stop, contain, and control leaks and spills. Recovery activities will be performed by plant associates or by an approved waste-oil handling contractor based on the spill volume and location. A spill kit with absorbent material is maintained at the Regulated Waste Building for use during control, containment, and cleanup. Should the need dictate, the designated plant personnel will call local fire, police, and emergency units for additional support. See Table 3 for telephone numbers to use in case of an emergency.

Notification requirements

Should a fuel or oil spill occur, the associate discovering the spill should immediately notify the parties listed below and provide the required reporting information.

Immediately make internal notifications to the designated Honda of South Carolina Manufacturing, Inc. emergency contacts at the telephone numbers listed in Table 3.

Per South Carolina regulations any spillage of oil that has or potentially could reach any water of the State must be reported to the South Carolina Department of Health and Environmental Control (SCDHEC) at the telephone number listed in Table 3.

Per 40 CFR 110.6, notice shall be immediately given to the National Response Center (NRC) in the event of any discharge of oil to navigable waters. Their telephone number can also be found in Table 3.

Also, the local emergency management office may be notified in the event of a discharge of gasoline (e.g., fire/explosion hazard). The telephone number for the Florence County Emergency Preparedness Department can be found in Table 3.

Reporting Information (40 CFR 112.7(a)(4)):

Information to be reported to the above relative to the spill:

- Name, address, and phone number of person reporting.

- Date and time of discharge.
- Exact location of the spill.
- Facility name and location of the spill.
- Material(s) spilled.
- Estimated quantity of spilled material.
- Source of spill.
- Apparent cause of spill.
- Damages or injuries caused by the discharge.
- Name of body of water involved; or the nearest body of water to the spill area.
- Action taken up to the time of the reporting.
- Actions planned for containment and clean up.
- Whether an evacuation may be needed.
- The names of individuals or organizations who have also been contacted.

Appendix F contains a Spill Report Form to be filled out in the event of a spill.

Immediate Action (40 CFR 112.7(a)(3)(iv) and (v)):

After notification of the above, if necessary, the associate observing the spill should take the following actions:

1. If possible isolate the source of the spill. Secure the area and identify the spilled material (e.g., gasoline, diesel fuel, lubricating oil, antifreeze, brake fluid, used oil, etc.).
2. Turn off any operating equipment in the area.
3. In the event of a gasoline spill, extinguish all ignition sources and isolate the immediate area. Bring an appropriate fire extinguisher into the area.
4. Request additional associate assistance and obtain necessary equipment to contain the spill.
5. If a fire or other serious emergency occurs follow the emergency response procedures for fire and evacuation.
6. Responders should use gloves, boots, and other personal protective equipment as necessary (reference MSDS). Do not work alone.
7. For small spills, use pads, pillows, rags or other absorbent material to contain the spill. For large spills, utilize on site methods to contain spill (shovels, straw, absorbent materials, sand bags, etc.) until response contractor arrives.
8. Pump or recover spilled material into proper containers for recycling and/or disposal. Do not pump gasoline. Gasoline spills must be evaluated on a case-by-case basis.

9. Initially label the container with a general description of the contents and seal the container.
10. Any reusable equipment used with combustible material should be cleaned and allowed to dry in a well- ventilated area away from heat, flame or spark.
11. Replenish all spill response equipment used during the event.
12. Complete the Spill Report Form (Appendix F) and submit to the Emergency Coordinator (EHS Department)

Incident Review

1. Review incident and SPCC Plan.
2. Revise SPCC Plan as necessary and forward to document control representative.
3. If the spill was greater than 1,000 gallons or if spill was second in a twelve (12) month period of greater than 42 gallons, submit a report to USEPA.

Table 3. Emergency Telephone Numbers

Emergency Coordinators	
Wendell Hughes	(843) 346-8201 (office) (843) 362-2773 (home)
Tom Bailey (Alternate)	(843) 346-8117 (office) (843) 621-2444 (cell)
Fire	
Timmons ville - Sardis	911
Sheriff	
Florence County	911
South Carolina Department of Health and and Environmental Control (SCDHEC)	
After Hours	(803) 253-6488 (888) 481-0125 (24 hours)
National Response Center (EPA)	
	(800) 424-8802 (24 hours)
Florence County Emergency Preparedness Department	
	911 (843) 665-7255
Outside Clean-Up Contractor	
Refer to Current Contractor List in EHS Dept.	

PART V
CONFORMANCE WITH APPLICABLE GUIDELINES

In addition to the minimal preventative standards described in Part III, the following is a discussion of conformance with applicable requirements as cited.

A. Facility drainage (40 CFR 112.8(b)):

Drainage from the storage areas is controlled as follows:

In accordance with the regulations, all drainage from secondary containment structures exposed to rainfall either has no drain or is restrained by lockable valves to prevent an uncontrolled discharge from the containment structure. The secondary containment structure may be drained by opening the valve, by pump, or ejector; however the discharge must be manually activated and must be inspected to ensure no oil is present prior to discharge. When accumulated water is drained it must first be checked to ensure no contamination has occurred. If oil is present appropriate action must be taken to remove the oil before the containment structure is drained. Any time a tank containment structure is drained it should be noted on the monthly SPCC inspection report. A sample copy of the monthly SPCC inspection report is provided in Appendix G.

B. Storage tanks (40 CFR 112.8(c)):

1. The aboveground tanks are designed and constructed with materials that are compatible with the materials stored and conditions of storage such as pressure and temperature. All of the tanks at this facility are shop built welded steel construction.
2. Each tank has properly sized containment. Secondary containment volume calculations are provided in Appendix D.
3. The ATV gasoline tank, Yard Dog diesel fuel tank, Test Track gasoline tank, and the Pump House diesel fuel tank have visual level indicators. The Waste Die Lube tank has an electronic level indicator that is connected to the Simplex System alarm.
4. The periodic integrity-testing program consists of monthly and annual visual inspections by trained plant associates. These visual inspections (see sample forms in Appendix G) include:
 - a. Observation of the outside of the tank for signs or deterioration, leaks, or accumulation of oil inside the containment structure. [Note: for the double walled tanks the interstice can be observed via access ports on the secondary tank.]

- b. Tank supports and foundations.
- 5. The Honda of South Carolina Manufacturing, Inc. facility is deviating from the integrity testing provisions of 40 CFR 112.8(c)(6) that call for inspection and another testing technique based on consideration of installation/design as equivalent environmental protection. The facility follows recommendations in the Steel Tank Institute publication SP001 Standard for Inspection of Aboveground Storage Tanks. Equivalent protection is based on:
 - a. The tanks are small shop built tanks.
 - b. All of the gasoline and diesel fuel tanks are elevated on either pedestal or skids and all sides and ends of the tanks are visible.
 - c. All of the double walled tanks have an interstice that can be visually inspected via an access port.
 - d. All tanks are visually inspected at least monthly and annually (see Item E – Inspections and Records below).
 - e. The 15,000 gallon Waste Die Lube Tank will have an external inspection by a certified inspector once every twenty (20) years in accordance with the Steel Tank Institute Publication SP001 Standard for the Inspection of Aboveground Storage Tanks.
- 6. Any visible oil leaks, which result in the loss of oil from a container, including but not limited to seams, gaskets, piping, pumps, valves, rivets, and bolts, are reported and corrected as soon as practicable after they are detected.

C. Facility transfer operations, pumping, and in-plant processes (40 CFR 112.8(d)):

- 1. The delivery truck transfer pump is used to fill all the gasoline and diesel fuel tanks located at the plant. Off loading operations are continuously manned and follow a strict procedure.
- 2. The ATV gasoline tank transfer pump is internal to the tank. The internal pump is used to transfer gasoline from the ATV tank to the in-plant fuel dispensers. The in-plant gasoline dispensers are located inside the plant where there are no floor drains. The fuel dispenser/transfer pump is activated manually.
- 3. The Test Track gasoline tank has a tank mounted dispenser with internal pump. The tank, pump, dispenser, and hose/nozzle are positioned inside a concrete containment structure. The pump is manually activated.
- 4. The Yard Dog diesel fuel tank has a tank mounted dispenser with internal pump. The tank, pump, dispenser, and hose/nozzle are positioned inside a concrete containment structure. The pump is manually activated.

5. The Pump House diesel fuel tank transfer is by gravity flow (no transfer pump).
6. Engine oil, gear oil, cutting oil, hydraulic oil, grease, brake fluid, and antifreeze transfer from storage to the various in-plant points of use occurs manually (e.g., forklift).
7. In process use of engine oil, gear oil, cutting oil, hydraulic oil, grease, brake fluid, and antifreeze takes place in equipment sumps/reservoirs and tanks, totes, and drums serving various process operations. All process operations take place inside the enclosed manufacturing buildings where a leak or spill would not be subject to discharge.

D. Tank truck loading/unloading (40 CFR 112.7(h)):

1. Tank truck off loading procedures should meet the minimum requirements and regulations established by the Department of Transportation in 49 CFR 177 Subpart B. The general off loading guidelines are summarized below (the detailed off-loading procedures are provided in Appendix E):
2. No product shall be off-loaded unless the hand brake is securely set and all other reasonable precautions (i.e., wheel chocking) are taken to prevent motion of the tank truck.
3. No smoking or any other sources of spark or flame will be allowed in the vicinity of the off-loading operation.
4. Unless the engine of the tank truck is to be used for the operation of a pump, no product shall be off-loaded while the engine is running.
5. No product shall be off-loaded until all bonding and grounding requirements have been met.
6. A Honda of South Carolina Manufacturing, Inc. associate, familiar and trained in off-loading guidelines, is to be present during the entire fuel off-loading operation;
7. Drip pans, buckets, or absorbent materials will be used where small drips and spills occur.
8. The tanker truck and tank levels should be verified to insure proper transfer of the fuel from the tanker to the storage tank without overfilling.
9. Items to be checked during the filling operation shall include valves, tanker outlet, hose connection to storage tank fill inlet, tank valves, pumps, lines, connections, and tank level.

10. Each tank truck will be visually inspected prior to departure to prevent accidental disconnection of flexible transfer lines.

E. Inspections and Records (40 CFR 112.7(e)):

1. To provide for the detection of conditions that could lead to leaks or spills, the storage tanks, compactor/bailer reservoirs, oil storage building, used oil storage containers, containment structures, accessories, and piping systems are visually inspected monthly and annually.
2. The inspection procedures follow industry standard operating procedures and manufacturer specifications such as those outlined in the Steel Tank Institute Standard SP001 5th Edition entitled "Standard For The Inspection of Aboveground Storage Tanks". A copy of the Steel Tank Industry Standard SP001 is provided in Appendix H.
3. The results of the each SPCC inspection are documented, signed by the inspector, and made a part of the SPCC Administrative Records maintained by the EHS Department. They shall be maintained for a period of three years. Sample Inspection Forms are provided in Appendix G.

F. Security (40 CFR 112.7(g)):

1. Access to the plant is controlled at manned security gates. Security is maintained 24 hours per day seven (7) days per week.
2. The entire plant perimeter is fenced.
3. Lighting around the facility is suitable for the type and location of the facility giving consideration for discovery of spills during hours of darkness by operation and non-operating personnel.

G. Personnel and training (40 CFR 112.7(f)):

1. Plant associates will be thoroughly trained in the following:
 - a. Handling of materials, spill control and containment procedures
 - b. Operation and maintenance of equipment to prevent releases
 - c. Applicable pollution control laws, rules, regulations
2. Plant associates will be informed as to the following:
 - a. Associates designated accountable for spill prevention in the facility

- b. Who to contact in the event of a spill
 - c. Location of SPCC plan in the facility
 - d. Notification procedures in the event of a spill
- 3. Training sessions will be held on an annual basis to assure an adequate understanding of the SPCC plan. More frequent sessions will be held if new associates are hired or changes in the plan occur.
 - 4. These training sessions will highlight and describe known spill events or failures, malfunctioning components of equipment, and recently developed precautionary measures.
 - 5. Appendix I includes a sample of the Spill Prevention Briefing Report used to document training.

H. Facility Response Plans (40 CFR 112.20 – 40 CFR 112.21):

- 1. As illustrated in the “Certification of the Applicability of the Substantial Harm Criteria” at the beginning of the SPCC Plan, the facility does not cause substantial harm and therefore, a Facility Response Plan and corresponding training program is not required.

I. Facility Conformance (40 CFR 112.7(a)(1))

- 1. This facility is in conformance with the general SPCC requirements. The recommendations table in Appendix J identifies, if any, recommended facility deficiencies, recommended corrective actions and implementation dates.

J. Fail Safe Engineering (40 CFR 112.8(c)(8))

- 1. The ATV gasoline tank, Yard Dog diesel fuel tank, Test Track gasoline tank, and Pump House diesel fuel tanks are equipped with a direct vision gauges to provide a fast response system for determining the liquid level.
- 2. The Waste Die Lube tank is equipped with an ultrasonic electronic level indicator that is connected to the Simplex System alarm system in the event of tank overflow.

Appendix A

Oil Pollution Prevention Regulations

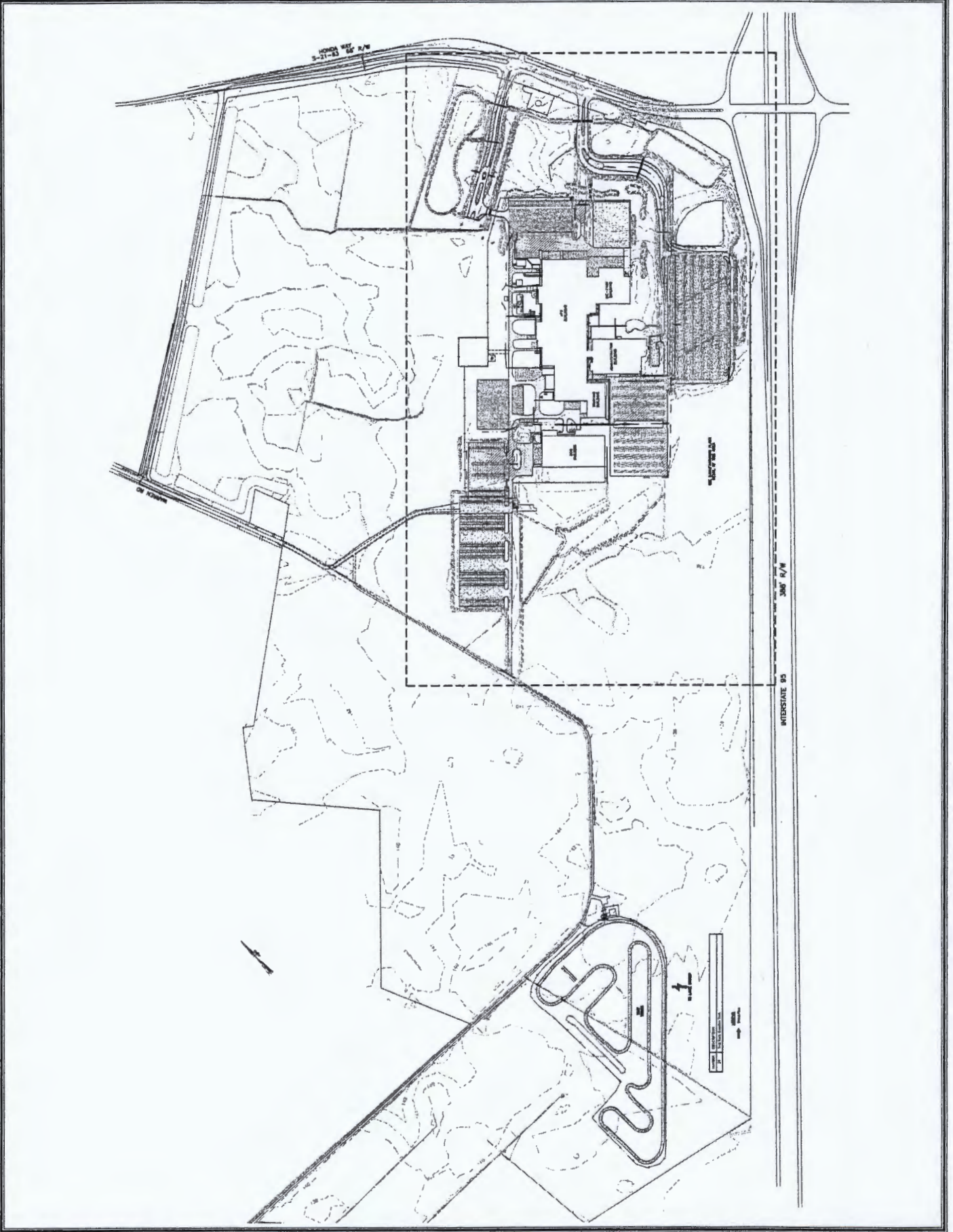
Appendix B
SPCC Plan Review

[illegible][illegible]

Appendix C

Figures

PROJECT: STORM WATER POLLUTION PREVENTION PLAN CLIENT: HONDA OF SOUTH CAROLINA, INC. LOCATION: SOUTH CAROLINA		SCALE: 1" = 100' (AS SHOWN) DATE: FEBRUARY 2011		FIGURE 2 SITE PLAN		bpb B.P. Barber ENGINEERING & ARCHITECTURE CHARLOTTE • GREENVILLE • COLUMBIA PLANNING • DESIGN • CONSTRUCTION		REVISIONS NO. DESCRIPTION DATE BY	
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Appendix D

Containment Volume Calculations

Appendix E

Truck Off-Loading Procedures

Aboveground Tank Inspection Report

[illegible]

Valve and Piping Inspection Report

[illegible]

Honda of South Carolina

Oil/Water Separator Drainage Report

[illegible]

Appendix F
Spill Report Form

Appendix G

SPCC Inspection Forms

Honda of South Carolina Manufacturing, Inc.

Spill Prevention Briefing Report

[illegible]

Appendix H

Steel Tank Industry Standard SP001

Appendix I

Spill Training/Briefing Form

Appendix J

Recommendations

Honda of South Carolina Manufacturing, Inc.

Recommendations

[illegible]